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THE BATHS
OF
FRANCE,
CENTRAL GERMANY,
AND
SWITZERLAND.

BY
EDWIN LEE,

CORRESPONDING AND HONORARY MEMBER OF THE MEDICAL ACADEMIES OF
VIENNA, MADRID, TURIN, AND NAPLES; OF THE MEDICAL ASSOCIA-
TION OF PRUSSIA; THE MEDICO-CHIRURGICAL SOCIETIES OF
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PREFACE.

MANY years have elapsed since my account of the "Watering Places of the Continent"* appeared, the subsequent editions were published under the title of the "Baths of Germany," and contained more detailed information respecting their remedial properties ; some brief notices being appended of the chief French and Swiss Baths, which were comparatively little resorted to by English visitors. The number has, however, greatly increased within the last two or three years ; and I have reason to believe, now that the treatment of chronic diseases by means of mineral waters is becoming more general, that as these French Baths are at the present day so much easier of access than formerly, a large proportion of in-

* Published by Longman and Co.

valids and their friends are desirous of more information respecting them. I have, consequently, so greatly extended the portion of the volume which treats of them that it may almost be considered as a new work. The account of all the places described is derived, with three or four exceptions, from personal observation ; and in estimating the statements made by local practitioners and others, I have endeavoured to avoid being unduly biassed by those of a too partial nature, which are frequently put forth in favour of particular places ; my object being to present an impartial view of the respective properties and therapeutical applications of the springs treated of, upon which practitioners, and others whom the subject concerns, may rely with some degree of confidence.

13, *Curzon Street*, June, 1854.

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PART I.

BATHS OF FRANCE.

FRANCE possesses a great abundance of mineral springs of the highest efficacy, though differing somewhat in their nature and properties from those of Germany. Thus, while Germany contains scarcely any sulphurous springs of importance, with the exception of Aix-la-Chapelle, the Pyrenean departments of France are especially rich in this respect. On the other hand, there exists in Germany a great variety of warm and cold gaseous, and strongly mineralised saline, acidulous, tonic and aperient, and chalybeate waters, in which France is comparatively deficient. Of these may be mentioned Carlsbad, Marienbad, Franzensbad, Kissingen, Homburg, Schwalbach, Bocklet, Bruckenau, Fachingen, and Selters, which have no counterpart in France. There are, it is true, a great many chalybeate waters, especially in the northern and north-western parts;

and some are, doubtless, very efficient as tonic remedies, but, in general, like those of England, they do not contain the carbonic acid gas and saline constituents which conduce so materially to the digestibility, and absorption of these waters into the blood. They are, moreover, little if at all used in the form of bath, which is perhaps a more effectual means of obtaining benefit from them than their internal administration. With regard to saline thermal, alkaline, and slightly mineralised springs, France may be considered as being almost as well supplied as Germany, and in some instances better. Thus, although Bourbonne-les-Bains, Mont d'Or, and Balaruc are not so extensively available as the more strongly impregnated waters of Wiesbaden, Ems, on the other hand, is inferior to Vichy in cases where a course of alkaline thermal waters is required; while Bagnères de Bigorre, Plombières, Neris, and Luxeuil may be considered equal in point of general properties and efficacy to Baden-Baden, Gastein, Wildbad, and Sehlengenbad.

Germany possesses an advantage over France with respect to salt iodurated and bromated cold springs which contain a large proportion of gas, and many patients to whose cases this class of waters is applicable, annually derive advantage from those of Kreutznach, Nauheim, Soden, and others; for though there are some salt-springs in the Pyrenees and in other parts of France, they are less rich in constituents, and are but little resorted

to. The mineralised mud baths, and the gas baths and douches, which are employed at Marienbad, Franzensbad, and other German baths, are likewise highly efficacious in several intractable disorders; the only place with which I am acquainted in France where the mineralised mud is used remedially, is St. Armand, near Valenciennes.

In France, each of the baths is under the superintendence of a physician-inspector, under whom there is, in some of the most frequented ones, an assistant inspector. These officers are appointed by government; without their authorisation patients are not allowed to take a course of the waters. From the reports periodically sent in by the inspectors, a great mass of facts is obtained, by which the sphere of relative applicability of the different springs can be determined with some degree of accuracy. The Academie de Medicine likewise occupies itself a good deal with mineral waters, prizes being usually given for the best treatises on the subject, which is frequently brought under discussion in this assembly. These agents are, moreover, very extensively employed by the profession, both in hospital and private practice, in the treatment of chronic disease.

To the majority of British visitors, who seek more for recreation, than for a renovation of disordered health from the waters, the French baths would be found, in general, less attractive than those of Germany, especially near the Rhine;

the accommodation in most of them is inferior; there are comparatively few tables d'hôte, and those not very animated, dinners being frequently sent to families from a *traiteur*. There is also little general society, as the French when *aux eaux* rarely associate with those whom they have not previously known, or to whom they are not specially introduced. A musical band does not play at drinking hours, or at any other stated period; the public salons are but little frequented as a lounge, there being nothing to attract, except an occasional concert, and gaming not being allowed. With the exception of those in the Pyrenees, the baths in France lie at a distance from each other; and the surrounding scenery is less calculated to excite interest than that of most of the German baths, of which several of the most frequented (as the Rhenish) are situated near to each other, and an interchange of visitors is constantly taking place between them.

The practice of bathing in common, in public baths or piseinæ, is pretty generally adopted at Barèges and other of the Pyrenean baths, as also at Luxeuil, Plombières, and Neris. This practice was universal in former times, and among the Romans, and it is still maintained to a certain extent even in England in the present day, many persons preferring to bathe in the public baths at Bath and Buxton than in private baths. Teplitz may be mentioned as a bath in Germany where this practice still obtains, though only among

the lower class; but it may be questioned whether bathing in *piscinæ* be not more efficacious than in a *baignoire*, especially in the instance of slightly mineralised thermal waters, from the frequent renewal of the mass of water in contact with the body. M. Patissier, after stating that the Romans constructed extensive *piscinæ* at most of the thermal sources of Gaul which have been transformed, in modern times, into private baths, proceeds to add on this point, "There formerly (1581) existed at Plombières a basin or reservoir which was capable of containing five hundred bathers at once. Several inspectors have remarked that the soldiers and indigent patients who bathe in the *piscinæ* are cured more speedily than the rich who bathe in private baths. M. Bertrand (Inspector at Mont d'Or), ascribes this circumstance to another cause, viz., that bathers in the *piscinæ*, have not been subjected to the enervating influences, or the cares to which the inhabitants of cities are exposed. But at several baths, as Luxeuil, Plombières, Neris, &c., persons of all conditions bathe in the *piscinæ*. In fact, it may readily be conceived how, when baths are taken in common, the mass of water, being considerable, exerts upon the surface of the body a much greater degree of pressure than the water in a *baignoire*; it is continually renewed by the afferent currents, the mineralising principles must, consequently, be presented in much greater abundance, be better absorbed, and ex-

cite in a more permanent manner the cutaneous system. In the piscinæ the mineral water retains a great part of its gas, whereas in the private baths, where the water is often allowed to cool, the gas escapes, and the water is less active. In the piscinæ, the conversation is generally gay, each bather has a floating-table, and wears a long flannel bathing-gown.*

The division which I have thought it most advisable to adopt on this occasion is, that of the Baths of the Pyrenees, and those of Central and Eastern France, there being none in the northern and western departments particularly calculated to interest English invalids, or possessing properties which entitle them to a preference over others of the same class more conveniently situated, and having more resources for recreation ; I have, therefore, restricted my observations to those among the mineral waters of France which appear to me to be most suitable to my own countrymen whose state of health may require a course of these remedial agents.

* "Precis des Eaux Minerales."

FIRST DIVISION.

BATHS OF THE PYRENEES.

NOWHERE, within the same space, the Duchy of Nassau perhaps excepted, will there be found so great an abundance of efficient mineral springs as among the valleys of the French Pyrenees, and nowhere does there exist a greater variety of pleasing scenery. The cheerful aspect of the neat and populous villages—the well-wooded hills—and verdant meadows, intersected by small rivers or rivulets of the clearest water—contrast pleasingly with the sterility and grandeur of the snow-tipped mountain ranges, where the stillness is unbroken save by the noise of the impetuous *gaves* forcing a way over the rocky masses by which their course is impeded. The various *pics*, Du Midi, Marboré, Mont Perdu, &c., the Brèche de Roland, Gavarnie, with its rocky amphitheatre and cascades, are but a few of the

objects most calculated to excite the visitor's attention in this region. The attraction of scenery, in which mountain, stream, and valley, are so agreeably combined, together with the benefit which so many persons annually derive from a few weeks' sojourn in the Pyrenees, sufficiently account for the preference given to these baths by those requiring waters and mental relaxation for the restoration of their health. The springs of this district, of which I purpose to treat, are all sulphurous, with the exception of Bagnères de Bigorre and Capbern, and are comprised in the central and western portion of the Pyrenean chain. The department of the eastern Pyrenees, likewise possesses several highly efficacious sulphurous springs, as Ax Vernet, La Preste, Escaldas, &c., which I have not visited, and which have no medicinal superiority over the more frequented ones, while the accommodations are inferior, so that they offer no inducement to English patients to accord them the preference.

The railroad being now open from Paris to Bordeaux (and about to be opened to within a five or six hours' drive of Pau), obviates the inconvenience, formerly existing, of a long journey on the high roads, which rendered the Pyrenean baths comparatively difficult of access; many British travellers have, consequently, already availed themselves of the increased accommodation; the number in the Pyrenees last summer (as also at Pau in the winter), being greater than

in any former season. Pau must be considered as the central point for those coming from Paris. In the season there is diligence communication daily between this town and the principal baths; and carriages may be readily obtained for the Eaux Bonnes, Eaux Chaudes, Caunterets, &c., which lie within an easy morning drive of Pau. The route to Bagnères de Bigorre, Barèges, and Bagnères de Luchon, passes by Tarbes, which is the chief point for those coming from the east, or from Toulouse; whence the roads diverge to the different baths, and which likewise possesses abundant means of communication. Travellers from the centre or east of France, who are directing their course to Bagnères de Luchon proceed from Toulouse to St. Gaudens, where two roads diverge, the left or eastern one leading directly to this bath; if coming from the Mediterranean or the neighbourhood of Montpellier the route by Curcasonne and Foix is more direct than that by Toulouse.

BAGNÈRES DE BIGORRE.

THIS being the largest, most frequented, and the most central bath, may be considered as the capital of the Pyrenees. It is situate 1,700 feet above the level of the sea, at the base of the Pie du Midi, and is eneirolel on all sides but the north, by green hills and pine-covered mountains. The resident population amounts to 8,000 ; about half that number of visitors can be accommodated at the same time, and as the resourees for amusement are greater than at the other baths, a large proportion of the visitors sojourn at Bagnères more for other purposes than to reeruit their health. The number of English is at times not inconsiderable, this being one of the most agreeable summer residencees for those who winter at Pau, or other places in the south of France or Italy, and who do not wish to go northward. Many persons likewise pass some time at Bagnères previous to, or after having taken, a course of some of the other waters in this part of the country.

Bagnères was a place of great resort in the time of the Romans, by whom it was termed

“Vieus Aquensis.” The town and environs present a pleasing prospect from any of the heights. Its white and yellow painted houses with their slated roofs, the bright verdure of the valley, the deeper hue of the pine forests clothing the acclivities of the mountains whose summits are imbedded in perpetual snow, form a series of beautiful and striking contrasts; while the clear waters of the Adour and other streams diffusing fertility around, add to the beauty of the scene. There are, in the immediate neighbourhood, numerous well shaded walks and roads; among the most frequented are the Allées, the garden Théas, and the vale of Campan—the beauties of which have, however, been somewhat exaggerated by writers and poets. This part of the Pyrenees produces some beautiful kinds of variegated marble, and close to the town there is a *marbrière*, where it is worked into tables, statues, and other articles of taste. There is also a museum of stuffed birds and quadrupeds indigenous to the Pyrenees.

At the lodging and bathing establishment, Fraseati, there are public rooms for balls, concerts, and other entertainments, billiards, and newspapers. A single person may board here for about six francs a day. There are several other lodging and bathing establishments supplied by particular springs, as the Pinae, Lannes, Petit-Prieur, Santé, &c. The government establishment, Thermes de Marie Therese, is an elegant structure of white stone, the interior of

the bathing cabinets being composed of different coloured marble. The baths, thirty-six in number, are exceedingly convenient, each having a dressing-room attached to it; over the door is inscribed the name of the spring by which the bath is supplied. Those of La Reine and the Dauphin, which are the hottest, are most used. There is likewise the requisite apparatus for douche and vapour baths. As the water is too hot to be used at the natural temperature, it is received into a large reservoir to be cooled. There are as many as forty-two springs, which have doubtless a common origin, as the composition of the water is identical in all, and is not unlike that of Bath or Baden-Baden, though containing much less saline substance than either of these waters, viz., not more than three grains to the quart (chiefly sulphate of lime) and very little gas. Their temperature ranges from 27° to 35° R.*

On ascending the valley by a much frequented road, bordered with poplar trees for about a mile and a half, the visitor arrives at another bathing establishment in a secluded spot at the base of a

* The following are the names of the principal springs, and their temperature according to Fahrenheit's scale. The first six supply the establishment:—Dauphin, 119° ; La Reine, 115° ; Lannes, 113° ; St. Roch, 106° ; Foulon, 94° ; Des Yeux, 85° . The others supply private lodging and bathing houses, viz.: Bellevue, 114° ; Carrere Lannes (two), 124 — 114° ; Fontaine Nouvelle (two), 111° , 97° ; La Guthière 104° ; Grand Prè, 95° ; Lassère (two), 118° , 102° ; Petit Bain, 115° ; Petit-Prieur, 100° ; Pinac (two), 100° , 89° ; Salut, 90° .

steep hill, whence arise the springs from which it takes its name, Salut. Here are ten baths, into which the water keeps constantly flowing from a marble mouth, so that the baths are taken at the natural temperature ; they are in great request from an early hour till three in the afternoon. As there are no apartments in the building, the bathers must go on foot, in a carriage, or *chaise à porteur*.

On a hill at the entrance of the town from Tarbes, a chalybeate spring rises from the rock, and is drunk by some invalids, though, as it is but slightly impregnated with iron, and scarcely contains any gas, it would not be calculated to render great service where a chalybeate course is really indicated. From this spot there is a good view of the town and valley the Pic du Midi, and other mountains, and of the course of the Adour for some miles ; the *ensemble* forming a highly picturesque *tableau*.

Several of the springs are used for drinking as well as bathing. They are well calculated to remedy various disordered states of the general health, without the existence of any positive disease, such as dyspeptic ailments, especially of an erethetic character, with an inactive condition of the skin ; the less severe forms of rheumatism and gout ; irritation of the air-passages, and other disorders to which the class of slightly mineralised thermal springs is applicable, to which I

have more particularly referred in my work on Mineral Waters.

The Salnt baths are highly efficacious in some forms of spasmodic and nervous disorder, and are mostly used by ladies. Dr. Lemmonier, the physician-inspector, recommends baths of the hotter springs, Dauphin, La Reine, Guthière, &c., in cases of rheumatism and paralysis, where there is but little excitability of the system. Where there does exist such excitability, the baths having a lower temperature, Foulon, Grand Prè, &c, and one or other of these springs, according to particular indications internally; and in the form of bath in bronchial and laryngeal disease, and in humid asthma. In some of the milder forms of cutaneous disease, and where sulphur baths would prove too exciting, those of Bagnères might be used with advantage.

There is an hospital for poor patients to whose cases the waters are considered applicable.

Dr. Taylor, of Pau, considers that the climate of Bagnères exerts a decidedly sedative influence upon health and disease, and is, consequently, well calculated to repress irritation of all kinds. He quotes Dr. Farr (formerly of Nice), who observes: "The climate of Bagnères is anti-irritating and moist, depressing to the healthy, and has a tendency to allay irritation in every organ; and the pulmonary invalid soon finds that this is the kind of atmosphere he ought always to inhale; to

him it is decidedly beneficial, he escapes what the healthy never fails to experience, the seasoning common to all decided climates. The functions each organ are more quietly performed, and the organ itself is soon brought into so tranquil a state, that any change in its structure has a fair chance of being removed by proper and remedial means, he is, in fact, placed in the best situation to be treated.”*

As these remarks do not specify the kind of pathological condition to which a similar climate is suited, they are apt to mislead non-medical readers; many patients with pulmonary disease, would be more benefited by inhaling an atmosphere of a less sedative and relaxing nature, though where there exists much general or local excitation, this kind of climate would be preferable, but would not be so likely to produce permanent benefit.

Considerable improvements are in progress in the large establishment; in the southern pavilion a more complete douching apparatus. The northern pavilion will contain the *vaporarium*; general and partial vapour douches, a Russian bath, with shampooing table, and alternating warm and cold douches.

The number of patients in 1852 amounted to 2,500; average duration of stay, twenty days.

* “On the Climate of Pau and the Mineral Waters of the Pyrenees.” Parker, London.

CAPBERN.

Is a village with 600 inhabitants, near the high road from Bagnères to Tarbes, about equidistant (four leagues) from each of these towns ; and from its more elevated site, may, as respects climate, possess an advantage over Bagnères, though it must be altogether deficient in any other resources for recreation than those afforded by the scenery of the environs. The waters are scarcely warm enough for tepid baths (76° F.), and contain even less mineralising substance than those of Bagnères ; so that their remedial properties must be rather of a negative kind. Nevertheless, they are said to have been very efficacious in certain cases, especially of uterine disorder. Dr. Taylor speaks highly of the bracing qualities of the air in correcting the leucophlegmatic diathesis, and states that the waters have been very serviceable in cases of retarded and obstructed menstruation, depending either upon a congestive state, or upon general or local debility ; as also in cases of excess of secretion arising from similar causes, in some nervous disorders, in chronic catarrh, &c.

“There is,” adds Dr. Taylor, “another import-

ant section of disease, or rather of diseased liability, for the cure of which these waters deserve to be lauded *par excellence*, and that is in congestion of the brain in persons of sedentary pursuits, of advancing years, and generally where the vital powers of the circulating machinery of the brain, and other noble organs, have been impaired from whatever cause. So convinced is a French gentleman, known as a *diplomat*, of their efficacy in apoplectic predispositions, that he has been for many years an annual visitor, and has expended 30,000 francs in proclaiming their virtues to the world, purely from a philanthropic motive."

In any similar case, I am not disposed to ascribe the benefit derived solely or chiefly to the waters. The abstinence from habitual cerebral over-exertion, the plain living and breathing a pure invigorating air, combined with the effect of baths in equalising the circulation and innervation, without producing stimulation, as would be the case with any slightly mineralised water not of a high temperature (Chaudfontaine Schlangenbad), would be the most likely means to remedy a congestive state of the brain, of the abdominal or pelvic viscera, with their consequences, atony of function, discharges from the mucous surfaces, &c.

Dr. Filhol, in his recent work, remarks that the action of the Capbern waters resembles that of Bagnères, and is serviceable in nephritic calculus, gravel, chronic catarrh, stomach and liver derangement, amenorrhœa, &c.

Sulphurous Springs.—Having referred at some length to the general properties of sulphurous springs in my work on Mineral Waters, I shall only advert in this place, before giving an account of the particular baths, to the peculiarities which characterise the Pyrenean springs, as stated by the author of a recent work, who has more especially investigated their chemical composition. “There are,” he observes, “in the Pyrenees two kinds of sulphurous waters; the waters of one kind are very easily decomposed, and affect the patient by means of the large amount of sulphuric acid which is set free and which acts both upon the skin and lungs. The operation of these waters (at Bagnères de Luchon) is almost always rapid, and is immediately general; the others act more especially by means of the sulphuret of sodium; their action is in the first place local, and only becomes general in a gradual manner, so that the system has time to become accustomed to it, and can receive it without shock. The former kind is evidently the most suitable when we require to excite the system powerfully and speedily; their action is however, probably less durable than that of the latter.

“The waters which are more slowly decomposed enjoy, more especially, a reputation for the cure of wounds, ulcers, and fistulous sinuses. Is not their superiority in these cases owing to the circumstance that the sulphur which they contain, not being in a permanent state of decomposition, as

is the ease with respect to the former class, can exert its beneficial influence on the diseased part in a more complete manner?

The sulphurous waters of the Pyrenees may be divided into three classes, viz.:—1. Those having a basis of sulphuret of sodium. 2. Those having a base of sulphuret of lime; and 3, degenerated sulphuretted waters. Those of the first division are the most numerous and abundant. They are found at almost all parts of the Pyrenean chain, and mostly rise from granite, or from the schistous rocks which accompany it. Almost all of them are thermal (that of Labassère has, however, a temperature of only 12°). These waters present a decided alkaline reaction: they all contain in solution an azotized substance (*baregine*.) The sulphuro-sodic waters have a sulphurous taste very different from that of the waters having a base of sulphuret of lime.”

“What distinguishes the sulphurous springs of the Pyrenees from all other mineral waters is the small quantity of soluble substance which they contain. A quart of any of these waters does not yield more than three or four grains of dry residuum: sulphuret of sodium, chloride of sodium, silica, carbonate or silicate of soda, and the organic substance above-mentioned, are the predominating elements. These waters appear to derive their origin from a considerable depth; they all emit, on boiling, a more or less considerable quantity of bubbles of azote.”

“The sulphuro-calcic waters (also termed accidental sulphurous), arise from earths of a more recent formation than those which supply the former class—more from secondary or tertiary formations, and often near collections of gypsum. They are generally cold, have the same smell as the others, and are much richer in saline mineralising principles. The salts with a basis of lime and magnesia are much more abundant in this division.”

“Variations not unfrequently take place in the temperature and quantity of the waters, from the melting of snow or other causes. This increased quantity is not always a consequence of the admixture of snow-water with the thermal water—as is proved by the circumstance that certain springs become more copious without undergoing any perceptible diminution of temperature, or of sulphurous impregnation—and further, the diminution of the amount of water is sometimes followed by a diminution of temperature, and in the amount of mineralising substance.”

“Almost all chemists consider that these waters contain, besides the sulphuret of sodium, a notable quantity of carbonate or silicate of lime; nay, investigations lead me to conclude, as respects the waters of Luchon, that they have a different chemical composition. Here there only exist traces of carbonate or silicate of soda, and whilst Anglada regarded the waters of this locality as the most alkaline of the chain, I look upon them, on

the contrary, as containing the smallest proportion of salts having an alkaline base. If the effects of these waters be analogous to those of alkaline waters, this depends principally upon the circumstance that the sulphuret of sodium is itself alkaline, and also that the sulphurous waters examined on the spot where they are employed have become richer in carbonate and silicate of soda, on account of the decomposition which the sulphuret has undergone by prolonged contact with the air.”*

MM. Anglada and Orfila state that the waters of the Pyrenees are mineralised by the mono-sulphuret of sodium. M. Fontan, on the other hand, considered that the mineralising principle is a sulph-hydrate of sulphur. MM. Boullay and Henry having subsequently examined the waters of Barèges and Cauterets, express themselves as being of the same opinion as Anglada. M. Fontan states that the most sulphurous springs rise opposite the highest mountains. “There exists,” he says, “a direct relation between the amount of sulphurous principle contained in the waters, and the nearness to the centre of the Pyrenean chain, and the most elevated peaks of the primitive rocks. The springs of Bagnères de Luchon contain the largest amount of the sulphurous principle, and these are situate exactly in front of the Maladetta, the highest mountain of the Pyrenees, and the nearest to the centre of the chain. The

* “*Les Eaux Minerales des Pyrenees*—par le Dr. Filhol, Professeur de Chemie a l'Ecole de Medecine de Toulouse, 1853.”

sulphurous principle progressively diminishes from this point on either side, eastward and westward; it then again suddenly increases on the east, opposite the Canigou, where the waters of Vernet are the most sulphurous of the Eastern Pyrenees; and on the west, opposite the Vignemale, where the springs of Cesar and des Espagnols of Cauterets regain what those of St. Sauveur seemed to have lost. On subsequently proceeding towards the ocean on the one side, and the Mediterranean on the other, we find the sulphurous principle again diminished, as is seen in the Eaux Chaudes and the springs of Vinça.”* M. Fontan divides sulphurous waters into the natural and accidental—the former arising, as has been observed, from granite, the latter from secondary or tertiary formations. The therapeutical energy of the waters, he observes, bears a relation to the nature of their origin. Natural sulphurous waters have a power of action which is in no wise proportioned to that of their constituent principles. Some of these springs, which do not contain half, a quarter, or a tenth part of the constituent principles (sulphurous or saline) contained in accidental springs, have nevertheless a much more powerful curative action than these latter.

* “Recherches sur les Eaux Minerales des Pyrenees. 1853.”

BARÈGES.

THE ascent to Barèges from the vale of Luz, is by a narrow gorge shut in by mountains, almost destitute of vegetation. On approaching the place the desolation appears to be complete ; not a tree is to be seen, and large masses of stone, brought down by the avalanches, lie scattered about in all directions. The village consists of about eighty or a hundred houses, forming a narrow street by the side of the Gave de Bastan, and is situate, at an elevation of 4,000 feet above the level of the sea, among pine-covered and snow-tipped mountains. It is uninhabitable during eight months of the year, a few men only being left in winter, to prevent the houses being occupied by wolves, and to repair the damage caused by the accumulation of snow or avalanches, by which every year some houses are destroyed,—as likewise sometimes occurs from the swelling of the torrent, when its waters are increased by heavy rains or melting of the snow. The damage thus occasioned is repaired before the approach of the season, during which Barèges is crowded with persons of all ranks, and offers better accommodation than under

the circumstances might be expected. As no one would be induced to select Barèges for a summer residence, except on the score of health, the numbers who annually resort thither afford the strongest proof of the efficacy of its waters.

In the centre of the street is a small Place, on one side of which is the bath establishment, on the other the military hospital, supported by government, the number of invalid soldiers sometimes amounting to four hundred, that of the visitors being upwards of a thousand. Almost all of them are invalids, and many are not able to walk, or get about with difficulty on crutches. There are two or three tables d'hôte, but most parties have their dinners sent from a *traiteur*.

Barèges has but little resource for recreation, and there is scarcely any general society, so that a residence in the place for several successive weeks would scarcely be tolerable but for the benefit anticipated and experienced from the use of the springs. There is, however, more space for walking exercise than might at first be imagined, for the carriage-road from Luz, in the valley (whence an hour is required for the ascent), extends no further than the village, there being merely a path or mule-track across the Tourmalet to Bagnères de Bigorre. The spots in the immediate neighbourhood most frequented are *Le Sopha* and *l'Heritage a Colas*, whence are visible numerous mountain *pics*, which those who are able to make long excursions may be interested in ex-

ploring. St. Sauveur (close to Luz) is within an easy drive.

The establishment contains sixteen private baths, but most of the patients bathe in the piscinæ or public basins, of which there are three, viz., a civil, a military, and one for the poor. The piscinæ for the hospital patients is an oblong vaulted chamber, with stone walls; the water is about three feet deep, and flows through a wooden trough, beneath which those who require douching hold the affected part; about sixteen persons can bathe at the same time in each piscina. These piscinæ are sombre and inconvenient, they are, however, about to be reconstructed, and several other improvements are contemplated.

These springs are said to have been known to the ancient Romans. Traditional account states that their discovery was owing to a sheep, which was observed to stray daily from the flock, and to direct its course towards the spot, from which their efficacy soon became known to the people of the country. They were, however, scarcely frequented until Mad^m. de Maintenon, being at Bagnères on account of the health of the young Duke de Maine, and hearing of Barèges took him thither, and from the benefit which he derived the place has since been greatly resorted to by invalids from all parts, especially by wounded soldiers.

Most of the patients drink as well as bathe, and it is customary to commence bathing with

the temperate springs before using the hotter ones. Douches are a great deal employed; the water falling from a height of five or six feet from reservoirs through tubes about as wide as the thickness of a man's forearm. The season begins on the first of June and terminates in September. The springs of Barèges are, with those of Luchon, the most sulphurous of the Pyrenees. The Tambour or La Douche, which is the hottest (44° R.), is the most used; the temperature of the other springs is as follows: L'Entrée 42° ; Polard 38° ; Le Fond 36° ; La Temperée 33° ; La Chapelle 28° .

The water is perfectly clear; it does not taste strongly of sulphur, but the smell is very decided. Used internally, and in the form of bath, it often produces, like most other sulphurous waters, a degree of excitation, marked by acceleration of pulse, perspiration more or less abundant, increased appetite, and sometimes feverishness and sleeplessness. A temporary increase of pains, or of other symptoms previously existing, is a common occurrence, and is considered a favourable sign of the beneficial action of the waters, this aggravation being frequently succeeded by amelioration or cure.

In proof of the activity of these waters, Dr. Taylor mentions that Dr. Pagés (the inspector) "testifies to having seen persons in health, after having taken in the establishment three or four tepid baths, seized with inflammatory fever to

such an extent, as to render a vigorous mode of antiphlogistic treatment necessary ; whereas in a *state of disease* the tolerance of them is very remarkable. It is worthy of remark, that this power of bearing up against these unique properties diminishes in proportion as the invalid approaches a state of sound health. A naval captain, whom long-continued rheumatismal pains had crippled and rendered useless, took during three seasons the baths of Barèges, and was completely cured. During his fourth visit, which was made out of gratitude, he could not support the same baths which had been so propitious on preceding years ; so true is it that sound organs do not feel after the same manner as when they are diseased."

"It is particularly against scrofulous affections of the joints that the sulphurous waters appear to act with great efficacy. Dr. Pagés has seen several times strumous enlargement of the joints, even when ulcerated, sensibly ameliorated and even cured by the waters of Barèges, as often as the patients have used them with perseverance ; that is to say, during several seasons."

The water when drunk has a diuretic, diaphoretic, and expectorant action ; the bath by its general and local stimulating properties, cleanses foul ulcers, lessens the induration of callous and fistulous sores, promotes the exfoliation of carious portions of bone and subsequent cicatrisation, and frequently causes foreign bodies which had been long imbedded in the deeper textures to

make their way to the surface. It is also highly efficacious in allaying existing pains, whether of a rheumatic nature, or arising from wounds; in remedying the stiffness and immobility of joints where depending upon muscular retraction, or tumefaction of the soft parts; in dry asthma and chronic bronchitis, when not attended with much secretion; in hæmorrhoidal affections, jaundice, and other chronic disorders of the chylopoietic viscera, especially long-standing dysentery; in chronic syphilitic diseases, and those resulting from the abuse of mercury; in some forms of paralysis, as when of a rheumatic origin, and not depending upon cerebral congestion or extravasation, and in some intractable cutaneous diseases.

“Of 260 cases of lepra, psoriasis, and squamous disorder, treated in the course of five years, by Dr. Ballard in the thermal hospital, 136 were cured; 85 were perceptibly ameliorated; 33 underwent no change, and in six cases the symptoms were aggravated.

In the cases of cutaneous disease treated in the military hospital by Dr. Gasc, the following results were obtained. The proportion of cures in herpetic affections was as 31 to 51; in pustular eruptions 10 to 20; in furfuraceous eruptions 14 to 18; in squamous affections 7 to 10; in syphilitic 1 to 5.

Of 300 cases of rheumatalgia, noted with care, 125 were completely cured; 136 were greatly ameliorated; 35 manifested no improvement, and 3 were aggravated. Of 65 cases of lumbago 17

were cured, 40 sensibly ameliorated, 6 uncured. Of 31 cases of muscular retraction, and wasting of the limbs from rheumatism, there were 9 cured, 17 ameliorated, and 5 uncured. Of 9 cases of ankylosis, 6 false and 3 true, 5 of the former were manifestly improved, no benefit was obtained in the other cases. Of 159 cases of false ankylosis, depending on deposits or other results of inflammation, 32 were cured, 96 ameliorated, 31 uncured.

In most chronic affections, the full benefit derived is not always perceptible during the use of the waters, and many of the cases put down as ameliorated were, in fact, in an early stage towards a decided cure at one period not very remote.*

At a short distance from the village, on the right bank of the *gave*, rises the spring Barzun, which supplies a small establishment, consisting of seven bathing cabinets, douche, and drinking fountain. The water is more slightly impregnated with the sulphurous principle than that of Barèges, and is more adapted to persons of an excitable temperament; it is tepid, and requires to be warmed to the requisite degree of temperature for bathing.

The number of visitors who resorted to Barèges in 1851, amounted to 2,181. According to the Report of M. Pagés to the Academie de Medecine, in 1852, of 864 patients treated at Barèges, 190

* Dr. Taylor, op. cit.

were cured, 291 relieved, 365 left without having experienced any change in their condition, in two cases the symptoms were aggravated: 58 were relieved or cured after having left the place. The most numerous cures were effected among scrofulous and rheumatic patients, and those affected with cutaneous diseases. 1,020 patients were treated in the military hospital from 1848 to 1853: of these, 504 were cured, 4 died under treatment; in 71 the amelioration which ensued was not lasting; in 46 no amendment took place; in 347 the ultimate result of the treatment could not be ascertained.*

* Dr. Patissier's "Report to the Commission on Mineral Waters." Published in the *Memoires de l'Academie*. 1854.

ST. SAUVEUR.

THIS bath is situate about two leagues to the south-west of Barèges, and occupies an elevated plateau on the edge of a wide and deep ravine the precipitous sides of which are covered with trees and brushwood, between these the *gave* dashes impetuously three hundred feet below. It consists of two rows of houses with balconies, and slanting slated roofs; in the centre of the street stand the two principal buildings, the church and the bath establishment; a handsome edifice with sixteen bathing cabinets and a drinking fountain; a neat stone bridge crosses the ravine, connecting St. Sauveur with the Vale of Luz, of which several of the houses command a delightful view, and these are always most in request. Not more than three hundred visitors can be accommodated at the same time, the want of room consequently renders lodgings dearer than at some of the other baths; there is little or no general society, but there are few spots where those who delight in the beauties of scenery, and who care but little for watering-place amuse-

ments, could pass a few weeks more to their satisfaction.

Paths, easy of ascent, and supplied with seats, are cut among the hills, leading either to cascades, to platforms, whence a more extensive view of the country may be enjoyed, or to secluded spots shaded by clumps of trees. The *Jardin à l'Anglaise* and *Bellevu* are the most frequented walks; the *Desert*, on the opposite mountain, reached by a bridge thrown across the *gave*, is likewise much frequented; but the chief object of interest in the environs is the celebrated cascade of Gavarni in the *Cirque de Marbore*, to which, however, there is merely a bridle road. Tractable and sure-footed ponies are here, as at the other Pyrenean baths, always at the visitor's command.

St. Sauveur possesses only one spring with two outlets, which is used for bathing and douches. In composition it greatly resembles those of Barèges, but being less strongly mineralised, and having a lower temperature (28°), it is better supported by delicate and irritable constitutions; enjoying a reputation for the relief of diseases peculiar to females, the greater number of visitors at St. Sauveur consists of ladies, whereas at Barèges the male sex greatly preponderates. As however the places are so near to each other, a constant communication and interchange of visitors takes place, St. Sauveur being considered as an appendage to the springs of Barèges. A

course of the baths is very efficacious in many nervous disorders, in some cases of bronchial irritation, nervous asthma, and catamenial derangement. It may also be recommended in some of the forms of disease which have been named under the head of Barèges; but where, from various causes, the action of these springs might be attended with too much general excitation.

According to the report of M. Fabas, 1,697 paying patients used the baths in the season of 1852. A large proportion of these were labouring under nervous lesions of the digestive organs; of 13 cases of gastralgia (painful affections of the stomach), 9 were cured and 4 ameliorated; some cases of *tic-douloureux* which had resisted the action of other waters were cured by the *douches ecossaises* (alternate douching with warm and cold water). Baths and douches, combined with the internal administration of the chalybeate spring Viscos, were found to be very efficacious in the treatment of amenorrhœa, leucorrhœa, and chlorosis.

BAGNÈRES DE LUCHON.

THIS little town, containing a population of 3,000 inhabitants, lies in the rich vale of Luchon, at the conflux of the Pique and the Go, not far from the Spanish frontier, and is built in the form of a triangle, of which each apex terminates in an avenue of trees. The lime avenue, bordered with neat houses, termed the Cours D'Eligny, leads to the establishment, which is situate at the foot of the hill whence the water issues.

Few watering-places possess greater inducements than Bagnères to make excursions in the environs ; the varied mountain scenery, the verdant valleys, freshened by streams of limpid water, and the well-wooded surrounding hills, afford ample scope to the lovers of the picturesque for the indulgence of their taste. The lakes of Oo and Seeulejo, the waterfalls Montauban and Jusset, the Maladetta and its glacières, the Port de Venasque, the valleys D'Oueil and Larboust, may be mentioned as the chief objects of interest with which the neighbourhood abounds. There is likewise more society than at most of the other

baths, and considerable improvements have been effected of late, so that there remains little to be desired, both as respects the general accommodation of visitors, and the facilities for obtaining every possible advantage from the use of the waters. The establishment recently constructed comprises a vast hall, communicating by two transverse galleries with the baths, and terminating in a broad staircase, which leads to the inhaling rooms, the drinking fountains, the reservoirs, and subterraneous *stufæ*, or vapour-baths.

Seven bath-rooms, leading to the cabinets, constitute so many isolated pavilions, some of which have very elevated vaulted roofs; in others the vaults are lower, which increases the elevation of temperature and promotes the action of the sulphhydric acid on the patients. The waters are so distributed in the bath-rooms that each may be taken according to the special indications, with or without vapour-baths, and in an atmosphere more or less impregnated with the sulphurous principle, the amount of which can be regulated at will. There are a hundred baths composed of marble; all of them are supplied with local moveable douches, and injection douches; twenty-five have ordinary douches of divers calibre; there are likewise five large douches: three piscinæ—one for indigent patients—in each of which fifteen persons can bathe at a time; vapour-baths and douches, for general or local application; two Russian baths, supplied at will either with sul-

phurous or saline vapour, a gymnastic and swimming-bath, and seven drinking fountains disposed along the corridors.

The temperature of the springs ranges from 36° to 52° R. The stronger ones are the most sulphurous of the Pyrenees; there are, however, others, having a less degree of sulphurisation: some of the hottest are at the same time the most strongly mineralised (Bayen, Prè No. 1); others which are also very hot are less sulphurous (Grotte Superieure); others again are very rich in the sulphurous principle, and have a lower temperature (Borden No. 1, Seiger No. 1); some again have a low temperature, and are but slightly mineralised. Some of these waters have the property of undergoing a partial decomposition, so that a portion of the sulphur which they contain primarily, in the state of sulphuret of sodium, becoming freed, is suspended in the water, to which it imparts the appearance of an emulsion. These milk-like baths are greatly in request.

Connected with the establishment are subterranean galleries, excavated in the mountain,—some in the granite itself,—by which the superior springs can be traced to their source in the rock. These galleries are almost throughout their whole course sufficiently high for a person to walk in upright. A considerable extent of them has been appropriated as chambers for inhaling the vapour, and as dry *stufæ*. At the entrance of the gallery La Reine, there is a chamber of a semi-circular

form, in the centre of which is a drum-like apparatus having numerous perforations, which may be wholly or partially closed at pleasure, by which means a variable quantity of sulphurous vapour may be diffused throughout the chamber. When the vapour of the mineral water is freely admitted the temperature of the air is raised as high as 46° (centigrade). A small lateral gallery serves as a dressing-room. The sulph-hydrometrical degree of each spring is not constant; some of the springs present considerable variations; these variations appear to be generally connected with changes in the barometer; the richness of the springs increases when the barometer ascends regularly for several days, and decreases when it descends. The sulphuration of the springs seems likewise to vary with the seasons. They appear to be most sulphurous in cold weather. There is no relation between the sulphurisation of the springs and their temperature.*

These springs were employed in the time of the Romans: nine are now used, namely:—

	Temp. (cent.)	Sulphurisation.
Bayeu . . .	67°	0·883
La Reine . . .	59	0·620
Grotte Superieure . .	55	0·435
„ Inferieure . .	—	0 323
La Blanche . . .	48	0·391

* These details of the composition of the waters, as also the account of the new establishments, are derived from the work of M. Filhol, as I have not visited Bagnères since its construction.

	Temp. (cent.)	Sulphurisation.
Ferrus . . .	30°	0·037
Chaffoir . . .	47	0·584
Richard . . .	52	0·547
L'Enceinte . . .	51	0·597

There is likewise a cold spring with a slight sulphurous impregnation. The Reine and the Grotte Superieure chiefly supply the drinking fountains, as well as several baths; the water is sometimes drunk mixed with milk.

The number of these springs differing in temperature and amount of sulphurisation, and the various modes of their employment, namely, drinking baths, half-baths, douches, vapour, and inhalation, admit of their adaptation to most of the diseases in which this class of waters is more especially indicated. Their operation is generally exciting; they produce greatly increased action of the capillary circulation, and not unfrequently an eruption, an exacerbation of pains, or of other existing symptoms. Constipation likewise not unfrequently accompanies their use. These waters are not suited to cases attended with much irritation of the abdominal or thoracic viscera, nor to those complicated with general nervous irritability. In the majority of rheumatic, and in most obstinate cutaneous affections, as psoriasis, eczema, &c., the waters of Luchon are considered to be more efficacious than those of Cautcrets or Barèges, though the latter are preferable in cases of wounds, ulcers, and foreign bodies lodged in different parts.

M. Barrie (the inspector) and M. Fontan speak highly of the effects of the waters in the various manifestations of the scrofulous diathesis—as articular swellings, ophthalmiæ, ulcers, &c., in muscular and articular rheumatism, and in paralysis, from this cause, or from others not of a cerebral origin. In cutaneous affections the sulphurous is more sought for than the thermal medication, and the springs which have not the highest temperature (Ferrus, Richard, La Blanche) are often preferable. Sometimes, however, in these cases, and especially in the dry scaly forms of skin disease, the sulphur vapour-baths, alone, or combined, or alternated with water-baths of a higher temperature, are more particularly indicated.

Persons labouring under chronic bronchitis or laryngitis, vesical catarrh, gravel, glandular enlargement, leucorrhœa, stiffness of the limbs from rheumatism, or the result of fractures, luxations, &c., are mostly successfully treated at Luchon.

The following enumeration of cases, observed by M. Barrie in the course of ten years, will best show in what cases the most favourable results may be anticipated.

Cutaneous diseases; eczema, psoriasis, pityriasis, acné, impetigo; 1,020 cases, of which 889 were subjected to a prolonged course of treatment, 440 completely cured, 310 greatly ameliorated, 270 remained in the same state as before.

Chronic articular, and muscular rheumatism; 1,200 cases: 478 cured, 580 sensibly ameliorated, 145 uncured.

Scrofulous diseases, 1,317 cases : 484 cured, 589 ameliorated, 246 uncured. Of 125 cases of ophthalmia and otitis in scrofulous subjects, 43 were cured, 47 ameliorated, and 14 remained uncured.

Neuralgiæ; crural, sciatica, &c., 220 cases : 80 cured, 89 ameliorated, 50 derived no advantage.

Amenorrhœa, leucorrhœa, and chlorosis, 80 cases : 45 cured, 35 ameliorated.

Bronchitis, chronic pulmonary catarrh, 200 cases : 65 cures, 50 ameliorations, 85 unsuccessfully treated.

Paralytic affections, hemiplegic, paraplegic, chronic myelitis, 210 cases : 23 cures, 77 ameliorations, 110 unsuccessfully treated.

Nephritis and vesical catarrh, 85 cases : 17 cured, 37 improved, 31 uncured.*

M. Fontan states that these waters succeed best in cases of simple chronic bronchitis, or those connected with cutaneous affections ; in cutaneous diseases (as above specified), scrofulous swellings, with or without ulceration, and caries ; necrosis of the superficial bones, and syphilitic complaints in the second or third stage. During the employment of the waters mercury does not produce salivation, and those who arrive salivated are speedily relieved of this inconvenience.

Report of M. Barrie in 1852—80 cases of chronic cutaneous disease,—eczema, impetigo, psoriasis, prurigo :—33 cured, 26 ameliorated, 10

* Filhol, op. cit.

no change, 5 symptoms aggravated, 7 ameliorated or cured after departure. 87 cases of rheumatic affection : 27 cured, 42 ameliorated, 8 refractory, 4 aggravated, 6 ameliorated after departure. 47 cases of scrofulous disease : 17 cured, 22 ameliorated.

The number of patients amounted to 2,655.

CAUTERETS.

THE visitor proceeding either to Barèges or Cauterets, after quitting Tarbes, and traversing a pretty undulating country, arrives at Lourdes, which occupies a beautiful and picturesque position at the entrance of a defile leading to the smiling vale of Argelès, and is overlooked by the ruins of an ancient castle. At Pierrefitte, situate at the further extremity of the valley, the roads diverge—the one to the left leading to Luz, St. Sauveur, and Barèges, the other to the right leading, by a gradual ascent, to Cauterets, passes at first through a beautifully-wooded dell, between lofty pine-covered mountains, and afterwards through a more wild and sterile district. A new road, by which the hill will be in great measure avoided, is however in progress of construction.

This celebrated watering-place lies in the secluded valley of Lavedan, 3,000 feet above the sea's level; and is surrounded by scenery of the most romantic kind. It consists principally of a single street which widens out into a square; the resident population amounts to near 2,000, and more than that number of visitors can be accom-

modated at a time. It is generally thronged during the season, especially by the Parisians, with whom it is a favourite place of resort. Apartments are consequently dear, and at times exceedingly difficult to be obtained. On the Place is the Hôtel du Cercle, where there are public rooms and newspapers, but in general there is not much association among visitors previously unknown to each other, so that a stranger who does not possess resources within himself would often find Caunterets, notwithstanding the magnificence of the scenery, but a dull place of sojourn for any lengthened period. There are two or three tables-d'hôte, but most families have dinner sent from a restaurant. Occasional concerts or other entertainments are given by itinerant artists, but the town is indifferently supplied with books or other means of occupation for rainy days.

Caunterets is deficient in shady walks, almost the only rows of trees being in an enclosure behind the town, which serves for a promenade; and from its being surrounded by lofty peaked mountains, the summits of which are covered with perpetual snow, the reflection of the sun's rays must at times be severely felt, notwithstanding its elevated position; and what must prove a great inconvenience to invalids under these circumstances, the bathing establishments are mostly out of the town, some of them being at a distance of more than two miles off. The season lasts from June

to September inclusive, before and after which period poor persons from the neighbouring country are allowed to use the baths on paying a trifle (two or three sous each bath.)

Beyond the town southwards, a gradual ascent leads to the Raillère spring which rises within a handsome isolated edifice, with central vestibule and drinking fountain, on either side of which are bathing cabinets furnished with marble *baignoires* and douche apparatus. Some distance beyond are the springs Du Prè, Petit St. Sauveur and Du Bois, the latter being high up on the mountain's side. The Mahourat, which is only used for drinking, is also in this direction. These springs rise nearly a league from the town amidst scenery of the most magnificent description, near the junction of two foaming torrents, which being obstructed in their course by large masses of rock detached from the mountains form at intervals numerous cascades. From hence the road to the right leads to the Lac de Gaube and the Pont d'Espagne (the latter being a narrow bridge thrown across the torrent from one rock to another), which are the objects best worth visiting in the environs.

In the immediate neighbourhood of the town is the Monne, from the summit of which may be obtained, perhaps, the finest view of the Pyrenean mountains, including the Vignemale with its glaciers; the Pic du Midi, Marboré, the Brèche de Roland and Mont Perdu, together with the Lac de

Gaube and its cascades; the valleys and plains of Bearn, and the adjacent districts stretching northwards as far as the eye can reach.

Besides the springs already enumerated, there are others in a different direction, which are more sulphurous at their source than the southern group, and are chiefly used for bathing. These are 1. Bruzaud, which rises at the foot of the hill called Pic du Bain, close to the town; 2. Cesar, high upon the same hill; La Reine, near the former; 4. The Espagnols, and 5. Pause. Considerable improvements have been effected at these springs of late years. Thus, a handsome establishment, with twenty bath cabinets, four douches, and a large saloon supplied by the Espagnols and Cesar springs has been lately constructed; subterranean excavations have been made by which the amount of water furnished by these and other springs is greatly increased. At the Pause, where new baths and douches have been constructed, the amount is nearly doubled. A new establishment is also about to be erected for the Cesar, and considerable ameliorations are contemplated at the Raillère.

From the long passage of the water of the Cesar, Espagnols, and Bruzaud, through aqueducts from their source to the establishments, they lose somewhat of their sulphurous property, so that the baths of the Raillère and Pause—where the springs, though less sulphurous than the others at the source, rise close to the establish-

ments—contain, perhaps, as large an amount of this principle as those of the former.

The Bruzaud water, in particular, drawn at the establishment, contains scarcely any sulphurous principle, which, as stated by M. Orfila, is lost during its passage along a badly constructed aqueduct, which allowed the access of air, the oxygen of which combining with the sulphuret of sodium, transforms it into a sulphate of soda. Notwithstanding its deterioration in this respect, this spring is very serviceable in several diseases, especially in cases of abdominal obstruction, the sequelæ of intermittent fevers, &c., to which the more strongly impregnated sulphur waters would be less applicable, its action being more laxative than that of the others.

The temperature of the springs ranges from 21° to 40° R. In composition, the water is very analogous to the other springs of this part of the Pyrenees, but, though not materially differing in the amount of constitutional principles, they do differ materially with respect to the degree of sulphuration, and in the important circumstances of temperature and locality; and though several are applicable in similar cases, yet certain of them have acquired a more special reputation in particular complaints. Thus, as has been already observed, Barèges is recommended *par excellence*, in cases of old wounds, ulcers, long standing affections of the bones, or joints of a scrofulous or rheumatic origin; Bagnères de Luchon in the

majority of rheumatic, paralytic, and cutaneous affections; St. Sauveur in nervous and some local affections to which women are more especially subject; the Eaux Bonnes in pulmonary disease; the Eaux Chaudes in rheumatic and gouty complaints, and some forms of cutaneous disorder; while Cauterets, from the number of its springs, and the differences in their temperature and degree of mineralisation,—in which it is equalled only by Luchon,—may be adapted to most of the above-mentioned indications.

The greater number of patients are not of the class which is deprived of the free use of their limbs as at Barèges, though the number of these is not inconsiderable, but consist of persons labouring under various forms of indigestion, disorder of the respiratory apparatus, or a tendency to consumption, who for the most part use the Raillère. The Pause is preferred in cases of chronic rheumatism, bronchitis, with copious expectoration, the humid kind of asthma, long standing complaints of a syphilitic origin, scrofulous tumours and ulcers, and cutaneous diseases, especially of the dry scaly kind. The Cesar and Espagnols springs fulfil the same indications as the preceding, but on account of their high temperature and more energetic action, they are better adapted to individuals of a lymphatic temperament or torpid habit; these waters are likewise much used in paralytic complaints; in those of the bones, and in the more intractable forms of

scrofula. The springs du Prè and Du Bois are mostly used for bathing and douching, in cases of chronic rheumatism, rheumatic gout, and skin disease. The Petit St. Sauveur, which is less strongly mineralised than the others, is said to be very efficacious in nervous disorders, hæmorrhoids, and uterine irritation from congestion, &c. Those nervous complaints which are attributable to derangement of the alimentary apparatus, are best treated by the Raillère, which likewise enjoys a high reputation in affections of the respiratory organs, as chronic catarrh, laryngitis, and in the first stage of phthisis. Comparing it with the Eaux Bonnes in these cases, M. Filhol observes that the latter are more exciting. "The degree of excitation," he says, "occasioned by sulphurous waters is not always proportioned to their richness in alkaline sulphuret. The action of the sulphur is singularly modified by the other elements which are associated with it. The water of the Raillère being more alkaline and richer in organic substance than that of Bonnes, its action on the economy may well not be the same; the mode of administration likewise partly accounts for the difference. At Bonnes but few baths are employed, whereas at Cauterets, entire and half baths are very frequently used, the latter producing a derivation from the upper to the lower part of the body."

The waters of Cauterets are less hot and less sulphurous than those of Luchon, but they are

more alkaline. Although rich in silice, they nevertheless allow but little of the sulph-hydric acid to escape, hence these waters are milder and more sedative than those of Luchon."

Dr. Taylor remarks with reference to the climate: "Cauterets is 1,000 feet lower than Barèges; it is better sheltered, has a less keen raw air, and is not subject to the constantly recurring fogs which infest the latter. The air of Cauterets again, is more bracing than that of the Eaux Bonnes, and except in cases where a sedative atmosphere is indicated, such as tuberculous irritation of the air-passages or the lungs themselves, when the Eaux Bonnes are very suitable, is more conducive to the favourable action of the waters in the great majority of the diseases for which invalids resort to them."

M. Buron (the inspector) states the following as the proportion of persons cured or relieved there during one year:—

Muscular and fibrous rheumatism, 252 cases: 118 cured; 54 alleviated; 11 treated without success; 18 cured or alleviated after leaving the place.

Chronic bronchitis, 265 cases: 118 cured; 54 alleviated; 7 treated without success; and 15 afterwards ameliorated.

Asthma, dry and humid varieties: 108 cases, none cured; 78 alleviated; 22 treated without success; and 8 afterwards ameliorated.

Consumption in the first, second, and third

stages, 70 cases: cured none; 17 ameliorated; 44 treated without success; and 9 afterwards relieved.

Dr. Taylor speaks highly of the climate of Pau as a preparative, in some cases, for the action of the sulphurous waters by its sedative effects in modifying arterial action. "Cases of chronic bronchitis in nervo-sanguineous habits with fever and permanently increased pulse, as well as in acute rheumatism in a similar temperament, are reduced to a standard which brought them safely under the influence of the sulphurous waters, whereas on the first arrival of the patients all the symptoms would have been most certainly aggravated by their use."

EAUX BONNES.

A HIGHLY interesting but steep mountain path across the Col de Torte, connects Cauterets with the Eaux Bonnes, which are seven leagues from Pau. At the little town of Laruns in the valley of Ossau, the road separates into two, that to the right, leading up a wild defile between mountains, the acclivities of which are clothed with box, to the Eaux Chaudes, while the one on the left leads by a steep ascent to the Eaux Bonnes, which is closely encircled by rugged mountains (8,000 feet above the sea), the sides of which have been in some parts cut away to allow space for new erections; for Bonnes consists only of a row of about thirty houses which are altogether insufficient to lodge the increasing number of visitors; close at hand are marble quarries which have furnished materials for building several of the houses, which have consequently a handsome appearance, and are clean internally; the accommodation being better than at many other watering places; though, as may be supposed, the price of lodgings is, in the height of the season, very high.

About 500 visitors can be accommodated at the same time.

The establishment—with baths on the ground, and a public room on the first floor—is an elegant structure. The bathing cabinets are handsomely fitted up, the *baignoires* being constructed of white marble. In the vestibule is the drinking fountain, these waters being more used for drinking than for baths, for which in any considerable number the supply would be insufficient. There are four springs, viz., La Source Vielle, La Source d'Enbas, and La Source Nouvelles, which rise behind and supply the establishment; the first being used for drinking; the fourth termed Du Bois, rises a little way up the mountain. They are but slightly mineralised; “containing chiefly muriate of soda, and organic substance;”—and “are distinguished from most sulphurous waters by the feeble degree of alkalinity, their smaller amount of silex, and larger proportion of sulphate of lime.”* The water is also sent in bottles to Pau, and is drunk by some invalids during the winter.

There is at the Eaux Bonnes a great deficiency of shade in the middle of the day, and as the sun sets early behind the high mountains, the difference of temperature in the evenings requires to be guarded against. Neither is there much space for walking or riding exercise, except along the road, on account of the mountains being close to

* Filhol, op. cit.

the houses. A new path on the acclivity of the mountain overlooking the valley of Laruns, laid out and planted with trees, termed the *promenade horizontale*, constitutes the afternoon walk. At the principal hotels there are public rooms for *reunions*, and *tables-d'hôtes*. Visitors associate more with each other than at other baths where the company is more numerous, and where there are more resources for the occupation of time.

The Eaux Bonnes is not a desirable place for a summer residence, and is resorted to by few visitors, except invalids and their friends. Until the last half-century the place was difficult of access, although the water has long been in repute for the healing of wounds and in other cases.

"It is notorious," said Bordeu, in the middle of the last century, "that the Eaux Bonnes are one of the best *vulneraries* known, they are suited to all kinds of old wounds, which they cleanse in a surprising manner, they promote suppuration and are excellent in all cases of caries."*

From its position and elevation—2,300 feet above the level of the sea—the air is pure, though comparatively little agitated by winds on account of the shelter afforded by the lofty mountains from most quarters.

"The climate of the Eaux Bonnes," says Dr. Taylor, "more sedative than that of the other *sulphurous* watering places of the Pyrenees, has conspired with their non-irritating qualities, to

* "Lettres sur les Eaux Minerales de Bearn."

render them a safe remedy, even when the structure of the lungs has become primarily affected, and by acting beneficially in restraining the circulating number, prevents the increase of and even allays pulmonary irritation. The waters of the Eaux Bonnes taken at the source, may be ventured upon with the presence of urgent chest symptoms when we would not dare to prescribe, under similar circumstances, the waters of Canterets."

We have seen, however, that in the opinion of Dr. Filhol and others, the Raillère spring at Canterets, has a less exciting action than that of the Eaux Bonnes, owing to the causes specified; so that the above observation may be considered as referring to the hotter and more strongly sulphuretted springs of that place. Bordeu speaks highly of the effects of these waters in arresting pulmonary disease, and it is in this class of cases that they have been principally employed of late years.

"There are," he observes, "certain conditions of general depression and exhaustion, under which the system would succumb without the assistance of art. These infirmities which may be regarded as of a nervous character, these consumptions to which the English are so liable, may be expected to be greatly ameliorated by waters which have a penetrating balmy character, which would revivify the humours and restore the solid parts by moistening and nourishing them, by re-opening most

of the small vessels which have become dried up and altered."

I have had opportunities of knowing patients who have derived considerable advantage from passing summers at Bonnes and the winters in an appropriate climate, though it is questionable whether the advantage derived from a sojourn at Bonnes is attributable solely to the waters;—the pure mountain air in a sheltered locality has doubtless had no small share in the benefit which many patients have experienced. The author of a work on mineral waters, observes with reference to the action of those of the Pyrenees in pulmonary complaints, "In affections of the chest, treated by the waters of the Pyrenees, the powerful action of the rarified air breathed in the mountains is often forgotten, and persons are apt to ascribe too exclusively to the waters the improvement which takes place in the breathing."*

That most sulphurous waters do, however, exert a beneficial action upon chronic irritation of the air-passages is proved, by the advantage which many patients suffering from bronchial and laryngeal disorders have derived from their internal administration, even when not sojourning among the mountains. Thus, the cold sulphur spring of Weilbach in the Duchy of Nassau, is highly efficient in these cases, both when taken at the place itself, which is on a slightly elevated plain above the Maine, and where the air is pure—and when

* "Les Eaux Minerales." Dr. Chenu. Paris.

exported. The direct action of the sulphur upon the mucous passages, and especially when baths are at the same time employed—the derivation which it produces towards the skin—between which and the air-passages there exists a close sympathy—will suffice to account for the improvement often seen to take place in these cases.

Notwithstanding the slight degree of sulphurisation and comparatively low temperature, a small quantity of the water not unfrequently produces a decidedly exciting effect, exasperating existing symptoms, and Dr. Darralde (the inspector) usually exhibits it in small doses.

In his report of the action of the waters, Dr. Darralde gives 17 cases of consumption in the third stage to show that the disease was aggravated by their use; 33 cases in the first and second stage were ameliorated, and the cough disappeared. Out of 17 cases of chronic laryngitis a cure was effected in 4 instances, the others being sensibly ameliorated. Also in 17 cases of pulmonary catarrh there were 4 cures and 13 ameliorated.

EAUX CHAUDES.

THE position of the Eaux Chaudes is more wild and secluded than that of the Eaux Bonnes, being in a narrow gorge between box and fir-covered mountains, on the left bank of the *Gave d'Oleron*, which rolls impetuously below. The place was almost inaccessible up to the close of the last century; the descent being, according to Borden, by steps cut in the mountain's side, and by a narrow path where two persons could scarcely pass each other. Patients were carried on the backs of the villagers, male and female, of Laruns, and were obliged to bring with them even beds and provisions—none of the necessaries of life, except wood, being obtainable on the spot. A good carriage road now connects the Eaux Chaudes with the Eaux Bonnes, and is traversed by an omnibus; and a handsome new establishment, containing thirty-four bathing cabinets and a piscina, in which twenty persons can bathe at once, and provided with every requisite apparatus for the different modes of using the waters has been lately constructed. There are about twenty houses

built close to the mountain, but the lodgings and general accommodation are inferior to the Eaux Bonnes. In the environs there is a celebrated cavern, termed the Fairies' Grotto, which extends a considerable distance under the mountain. The frontier of Spain is about an hour's walk from the baths, and some distance beyond are the baths of Panticosa, which are a good deal frequented by Spaniards.

Although termed Chaudes, the temperature of the water is not much higher than that of the Eaux Bonnes; but yet it is sufficiently high for bathing without requiring to be artificially heated. There are six springs, termed Le Roi, L'Arreseque, Baudot, l'Esquirette, le Clot, and Mainvielle—this last is cold. They have but a slight sulphurous impregnation; the most sulphurous (l'Arreseque) containing not more than a third of the amount of this principle as compared with the Eaux Bonnes. The Baudot and Mainvielle are only employed for drinking.

The baths are said to be chiefly efficacious in rheumatic, paralytic, and cutaneous disorders; and they are preferable to the stronger sulphurous waters in some cases of those complaints where there exists much excitability of the system, or a tendency to congestion. The waters were formerly supposed to have great efficacy in cases of sterility, and were called by the Spaniards *Empregnades*; and M. Filhol remarks that the Clot spring is highly serviceable in cases of rheu-

matism and herpetic eruptions—the Esquirette is better adapted to nervous ailments; Le Roi suits scrofulous and other patients of a torpid habit; the Baudot is employed in chronic bronchial affections; l'Arreseque in ulcers and wounds.

The climate is less calculated for pulmonary invalids than that of the Eaux Bonnes or Caunterets. “The narrow ravine,” says Dr. Taylor, “acts with a funereal-like attraction to all the winds that may be tossing about on the higher valley of Gabas.”

The spring Esquirette is employed with great advantage in cases of amenorrhœa, dysmenorrhœa, active and passive uterine hæmorrhage, and ulcerations. It is by curing these affections that it has remedied sterility. In 1852, there were 1,342 paying patients; the average duration of the stay of each was twenty-five days.

SECOND DIVISION.

BATHS OF CENTRAL AND EASTERN FRANCE.

VICHY.

THIS small town is built on the right bank of the Allier, fifteen leagues from Moulins (now connected with Paris by railroad), in an extensive valley, bounded on all sides by hills rising in the form of an amphitheatre, and covered with fruit-trees and vineyards. The roads in the neighbourhood are good, the views pleasing, the air pure and temperate, and all the conveniences, with many of the luxuries of life, are to be found at Vichy. The new part of the town is separated from the narrow streets and indifferently built houses of the old town by a handsome promenade, bordered by trees and hotels, opposite to which stands the thermal establishment, which

comprises four vast court-yards, having in the centre reservoirs of water, twenty-two bathing cabinets, and twenty-four douches. On the first floor are the assembly-rooms. Six of the springs belong to the establishment; viz., Grande Grille, 34° R.; Puits Chomel, 32° ; Puits Carré, 35° ; Acacias, 24° ; Lucas, 25° ; Lardy; Célestins (cool), 18° . The spring de l'Hôpital supplies the hospital, twelve cabinets, and three douches: it is the only one exposed to the air, and the edges of the basin into which it flows are covered with the greenish vegeto-animal substance known by the name of glairine, which is also deposited on the basin of Carlsbad and other thermal springs.

The springs of Vichy were used by the Romans. Remains of piscinæ, of marble baths, medals of Nero, and other antiquities, were found at the time the ground was cleared for building the establishment.

The water of Vichy is limpid, without smell, of an acidulous, alkaline taste, not unlike that of soda water. It contains a large proportion of free carbonic acid, which is most abundant in the spring des Acacias (twenty-three cubic inches to the pint). Next to this spring, Lucas, les Célestins, and Puits Carré, are the richest in this respect. Bicarbonate of soda, and carbonic acid gas, are the predominating ingredients of Vichy water: this salt is extremely plentiful in the Célestins, which contains forty-five grains to the pint; the Lucas likewise contains a large quan-

tity. Iron is also found in these springs; the Acacias contains half a grain to the pint, and might be ranked among the chalybeate springs, were it less rich in saline substance.

The operation of these waters is alterative, solvent, and diuretic, without being aperient or diaphoretic: it affects most perceptibly the secretion of urine, increasing its quantity, and altering its quality, so as, according to M. D'Arcet, to render alkaline the urine of a person after having drunk three or four glasses, or taken a bath: hence it is highly useful in some diseases of the urinary organs, especially the disposition to the formation of lithic acid, or what is commonly called red gravel. The water is also much used, both at the springs and throughout France, in those deranged states of the digestive functions which are termed abdominal engorgement or obstruction; in chronic enlargement of the liver or spleen; long-standing stomach disorder, with acidity; hæmorrhoidal affections; and uterine derangement. It has but little effect on most diseases of the skin and in rheumatism. Its use should be prohibited to plethoric, or highly irritable persons, to those of rigid fibre, in nervous diseases and affections of the chest.

Most patients only drink the water; beginning by the spring les Célestins, which is the coolest and pleasantest to the taste; they subsequently use the water of the Grande Grille, or Acacias. The Grande Grille has a high reputation in cases

of abdominal obstruction. The water of the Puits Carré, or Hôpital, is mostly used for baths.

According to Longchamp's Analysis, Two Pints of Water yielded

Free Carbonic Acid	.	.	17 cubic inches.
Bicarbonate of Soda	.	.	90 grains—(crystallised).
Muriate of Soda	.	.	10 —
Sulphate of Soda	.	.	8 —

with small quantities of lime, magnesia, silix, traces of iron, and of a vegeto-animal substance.

From the differences of temperature and amount of impregnation, the waters are applicable to several pathological conditions. A former inspector, M. Lucas, remarked, with respect to their action, “The seven springs of Vichy present in their medical employment more important differences than might be supposed, judging merely from the chemical analysis; and although it may be difficult to state *à priori* a reason for these differences, numerous observations, made in the course of twenty-five years, have left in my mind no doubt of the fact; in this state of uncertainty we must regulate our treatment according to the susceptibility of the organs, and of the patients—feel our way during the whole course.”

The Célestins is most used in calculous disorders, the Grande Grille in cases of visceral enlargement, in the form of baths and douches, with which the internal administration of the water is combined; the Acacias in scrofulous tumours, enlargement of the mesenteric glands, &c. The Puits Chomel in chronic catarrhal affections,

especially when complicated with deranged digestion.

It is not uncommon, after a few days' use of the waters, for patients to complain of feverishness, headache, insomnia or drowsiness, and an increase of previously existing symptoms. The appetite is generally increased by drinking the water, and the baths not unfrequently produce itching or eruption on the skin.

The Vichy water is drunk in considerable quantity, at a distance, especially in Paris; its composition is but little altered by exportation.

The absorption of these waters into the system renders the blood and secretions more alkaline. The mere alkaline reaction of this secretion is not, however, as has been supposed, a proof of the saturation of the fluid with alkali; for, as M. Durand Fardel observes, "The urine may be alkaline after the first bath, and yet, after a long course of treatment, an attack of indigestion, a temporary diarrhœa, and even any unappreciable circumstance, may cause this secretion to resume its acid character; and patients are cured even of uric acid gravel and concretions, notwithstanding their urine remains acid." *

The lithontriptic properties of the Vichy water and its power of dissolving stone in the bladder, have repeatedly formed the subject of discussion, not only in the Académie de Médecine, but likewise in the medical journals and other special

* "Des Eaux de Vichy, 1851."

publications As I have entered at some length upon the consideration of this question in another work ("On Gout, Gravel, and Stone*"), it will suffice to mention, on the present occasion, that in several stone patients treated by this means the urgent symptoms under which they had previously laboured were relieved, portions of calculus were passed, and in some no stone could be detected by sounding the bladder. M. Petit (the inspector) published in pamphlets, and subsequently in his work on Vichy, several cases which seemed to prove the efficacy of the waters, both in cases of stone and gout. It has been said, however, that in some patients, from the alkalisation of the blood and secretions, a cachectic condition was induced, attended with great debility. M. Durand Fardel (inspector of the spring of Hauterive, near Vichy), adverting to the statement of M. Petit, that the effect of the waters was to render the blood more fluid, observes upon this point, "When, under pretext of relieving the system of some superabundance of acid, you impregnate it with alkali, alkalise the textures and secretions naturally acid, and fluidify to an indefinite degree the blood; will it be always with impunity that you substitute this new chemical condition to those which belong to the normal state of the economy?"

Independently of the absorption of the alkali,

* Shortly to be published.

the Vichy, like other thermal springs, are calculated to be of service in cases of gravel and calculous concretions, both from the quantity of water drunk and passing off by the kidneys, and also from the general action of the baths determining from these organs to the surface by imparting greater activity to the skin. Even if not calculated to dissolve stone when actually formed, this water, by its twofold mode of action, is eminently adapted to cure gravel and calculous concretions of the lithic acid variety, and thus, in many instances, to prevent the formation of stone; it might equally be employed with good effect as a means of preventing a recurrence of the disease, after the foreign body has been removed by lithotomy or lithotrity, as also as a means of getting rid of the detritus and fragments left by the latter operation.

These remarks are no less applicable to visceral enlargements, and other cases, in which various waters used as baths, are efficacious as much, if not more, by their general action, than by their special effects. M. Prunelle, the former inspector of Vichy, remarked, that "the general property of the Vichy water is to re-animate the innervation of all the abdominal system, whether there exists inactivity of the liver, stomach, intestines, bladder, or any other organ."

"These waters even succeed in cases of inertia of the reproductive apparatus. When gout has a tendency to affect internal organs, as the stomach,

the Vichy water will be useful in strengthening this viscus; it will act in the same way as Bordeaux or Madeira wine which you give to patients in similar cases. There is a kind of gout which may be called *soft* gout, in which nature has not the power to produce a true crisis. The patients have incomplete attacks, it is rather an habitual state of suffering; they walk, as they say, upon sponges. In such a case the Vichy water is one of the best tonics, for, coming to the assistance of nature, it will favour the manifestation of the attack, and thus relieve the patient. But if the gout shows itself by inflammatory symptoms, in what way could the Vichy water be beneficial, even in the absence of crises? The organs are already too much excited by the gouty principle, without the additional stimulation of the mineral water. It would be to favour the increase of the disease. In like manner gout should not be interfered with in old people when restricted to the upper or lower limbs, for it is then but little to be feared. The intervention of the Vichy water would induce a displacement of the gouty principle, and consequently, dangerous metastasis. It is in similar cases, that apoplexy has been known to ensue upon the abuse of the mineral water.”*

On the other hand, M. Petit, considering the connexion of gout with a superabundance of uric

* “Guide Pratique aux Eaux Minerales de France,” &c. Par le Dr. James. Paris.

acid, and the presence of red gravel, remarks that when this acid is not eliminated by the urinary passages, it is determined to different parts of the body, especially to the joints, and gives rise to gout ; and that the Vichy waters, by their alkaline properties in neutralising the superabundant acidity, relieve the disease.

Though the absorption of the alkali is serviceable where the predominance of the uric acid diathesis has induced a superabundance of acidity in the blood, which exists in many cases of gout, yet much of the benefit is doubtless attributable to the continued use of baths of thermal water imparting greater activity to, and equalising the circulation, and determining freely to the skin, as equally beneficial effects are produced in this disease from others not alkaline (Wiesbaden), and even sometimes from waters which have but a slight degree of mineralisation (Wildbad, Bath, Buxton). To the same cause—the greater determination to the surface—is, doubtless, in part attributable the action of the Vichy, and also of other springs used in the form of baths, as well as taken internally, in calculous complaints. This opinion is corroborated by a distinguished surgeon of Lyons (who has recently published a valuable essay on diatheses, to which I have referred more than once in my work on Mineral Waters), who remarks, with reference to the action of these waters on the gouty and calculous diatheses, “ It appears to me certain that if these

waters (Vichy), like all alkaline waters, can act chemically upon the composition of the blood of gouty subjects, they can by this means have only a temporary action upon the effect, and not at all upon the cause of the diathesis, or on the diathetic condition. But these, like all mineral waters, have, in the first place, a general action upon the whole of the economy, and afterwards a probably special action upon some organs or secreting apparatus so as to determine, with respect to the gout, an effect of displacement of the fluxion. It is in this manner that purgatives act."

And, with reference to the calculous diatheses, he further observes, "What proves the essential part which is played by certain conditions of organisation of the kidneys in some individuals affected with the calculous diathesis, independently of any particular quality of the composition of their blood, is the circumstance that when a fluxion takes place in any other organ, and persists for a long time, the action of the kidneys, which gives rise to calculi or to gravel, ceases only to recommence when the fluxion abandons this organ, and is again transferred to the kidneys."*

The form of gout in which I consider the Vichy water is most likely to be beneficial, is in longstanding cases of an atonic character, with or without depositions around the smaller joints, unattended by inflammatory complication, or general excitability of the system, or by much de-

* Dr. Baumés "Sur les Diatheses." Paris, 1853.

rangement of the digestive organs and a constipated state of the bowels.

Both in cases of the gouty and calculous diathesis, patients who have been subjected to a course of drinking and bathing, whether an alkaline or other water, will mostly derive advantage from continuing to use for some time an alkaline gaseous water, as Selters or Fachingen.

About a league from Vichy, on the banks of the Allier, is the cold spring of Hauterive, which contains even more soda and carbonic acid than any of the Vichy springs—and has lately come into vogue—a handsome establishment has been erected.

Considerable additions and improvements have lately been effected in the establishment; the number of baths is increased from 125 to 300, they are divided into three classes; bathers of the first class pay two francs each bath; those of the second class a franc and half; the third class bathe at a still lower price.

M. Petit has treated with success some cases of obesity by the Vichy baths; with respect to the fears which have been expressed, that the quality of the blood would be deteriorated by the action of these waters, he observes, "In estimating the *modus operandi* of these waters, account is taken only of the bicarbonate of soda, as if the other constituent principles—carbonic acid, iron, carbonate of lime and magnesia, muriate and sulphate of soda, silex, the special organic substance,

&c.,—contained in the water did not modify the alkaline principle by imparting to it a medicinal action, somewhat different from that which it would have alone. A solution of 100 grains of bicarbonate of soda in a quart of water, would constitute an alkaline beverage, but such a preparation cannot be compared to the waters of Vichy. Patients who drink daily at the spring from eight to ten glasses of water cannot digest one or two glasses of a simply alkaline water.”

M. Durand Fardel states, that in dyspeptic cases considerable and speedy advantage was obtained from the Grande Grille and the Célestins (alkaline springs). In these cases acidity and constipation were the predominant symptoms. In other cases marked by nervous symptoms, general or local atony, the above-mentioned waters were inefficient or even injurious, but the employment of the Lardy spring, which is less alkaline and more ferruginous, was attended with beneficial results. Of 12 patients affected with chronic liver enlargement, 6 experienced a more or less decided amelioration; in the other none was observable at the period of their departure. Of 4 cases of gravel 3 were ameliorated.*

* M. Patissier's Reports.

MONT D'OR.

THIS bath lies within a few hours' drive of Vichy, about eight leagues south of Clermont, in a picturesque valley which bears evidence of having been the theatre of volcanic action, and on the right bank of the Dordogne, at the base of Mount Angle, whence the seven springs (six thermal and one cold) take their rise. The village does not present an attractive appearance, there is but little association among the visitors, and a deficiency of shade in the immediate neighbourhood, though the environs comprise several objects of interest and agreeable walks among the mountains, as the d'Allées du Capucin, the Salons, the Puy de Lancy, the highest mountain of central France. This and others of the chain have their summits covered with snow during more than half the year. From the position and elevation of Mont D'Or, the climate, even in summer, is often cold and variable, and storms frequently occur; on account of the high reputation of its springs, it is, however, a good deal frequented from the middle of July to the end of August. Some years ago

there were discovered an ancient temple, Roman baths, fragments of statues, and other remains, proving the high antiquity of the springs. Bishop Sidonius Apollinarius, who wrote in the fifth century, applies to them the expression *Phthisiscentibus Medicabiles*, which indicates, that at that epoch they enjoyed a reputation in the same class of cases for which they are mostly employed at the present day.*

The cold spring, St. Marguerite, arises immediately behind the establishment. It is acidulous, from the amount of carbonic acid gas (like the Maxbrunnen at Kissingen), and forms an agreeable beverage, being not unfrequently used mixed with wine.

The hot springs rise within the establishment, and have a temperature ranging from 42° to 46° (cent.), their names are as follow:—Cesar, or La Grotte (45°) Caroline; Grand Bain or Pavillon (42°); Ramond, Rigny, Madeleine (46°).

The water is colourless and inodorous, of a slightly saline taste, and emits bubbles of gas; the quantity of which is so great in stormy weather, that the entrance to some of the baths is prohibited, from an apprehension of persons being asphixied. Three springs, Cesar, Caroline, and le Pavillon, supply the twenty-five bathing cabinets, the douches and piseinæ of the thermal establishment, which is built of lava stone, and encloses three long areas, connected with each

* M. Bertrand considers that the waters of Mont D'Or are the *Culentes Baia* of this writer.

other by covered galleries. The first portion is termed the peristyle; the second the grand salon; the third the pavillon. The peristyle, on the ground floor, comprises in its central part two vast piseinæ for indigent patients, douches, and some bathing cabinets; on the sides are passages leading to special rooms for fumigations and vapour baths.

On the first floor is the grand salon, a spacious apartment, having nine bathing cabinets on either side, furnished with requisite apparatus for douches, &c. At the extremity of the grand salon, but a little more elevated, is the pavillon, containing five bathing cabinets.

A covered promenade extends along the front of the building; on it are the four drinking fountains supplied by the Madeleine, which is exclusively used for drinking, and the water of which is largely exported.

The following analysis of the Pavillon spring will serve to show the proportion of its mineralising ingredients in a gallon of water.

	Grains.
Carbonate of soda . . .	35·00
Muriate of soda . . .	25·72
Sulphate of soda . . .	8·50
Carbonate of lime . . .	24·15
Carbonate of magnesia . . .	8·22
Protoxide of iron . . .	0·70
Alumina . . .	6·82
Silex . . .	5·25
	<hr/>
	114·36

Carbonic acid gas 23·95 cubic inches.

Three or four glasses of the Madeleine water (the hottest) are drunk daily by the majority of patients; but the baths, which are taken at a high temperature, constitute the more essential part of the treatment. Patients on first entering the bath mostly experience an unpleasant sensation of heat, and it is only after being repeatedly plunged in the bath and taken out that they are able to bear it. The pulse which was at first small, afterwards becomes expanded and frequent, the pulsations amounting to 100; the face is flushed; the sweat runs down the forehead and temples; the breathing is accelerated, and a febrile attack is induced. When the physician, who is always present, deems that sufficient effect has been produced, the porters wrap the patient in a flannel gown, and carry him to his bed, which has been previously warmed. A feeling of *bien-être* is then soon experienced; a genial warmth succeeds to the prickling heat caused by the immersion; the skin is covered with moisture, and during the remainder of the day the patient feels himself stronger. The duration of these baths is necessarily very short. Many patients cannot remain there more than five or six minutes, and some are attacked by fainting fits.

Under the influence of this general excitation the bath-fever manifests itself between the third and the eighth day. The patients are pale, and some become thin; they are depressed and dispirited, and complain of a feeling of inward heat

and dryness of the skin. Constipation usually supervenes, so as to require the employment of a laxative. This temporary aggravation is, however, an almost certain presage of a cure, which evidences itself by its more or less decided signs of revulsion towards the skin; almost all the patients cured or relieved by these baths have experienced similar crises. "Some," says M. Bertrand, "have profuse sweats, the return of diminished or suspended fluxions; others boils or miliary eruptions, abscesses in the cellular texture, swellings of the large joints. In some the heat returns in parts which it had quitted; natural or artificial discharges which had been dried up are reproduced; cutaneous eruptions which had disappeared before, or in the course of the disease, reappear. Lastly, the functions of the skin, previously more or less deranged, have been restored in almost all to the normal state, or nearly so." In order to produce a revulsive action from the centre of the body to the periphery, foot-baths are greatly employed; douches, shampooing, friction, vapour baths, are likewise used for the same object.

M. Bertrand places great confidence in fumigations from the mineral water heated to the boiling point; the vapour is directed into fumigating rooms, where it is inhaled by the patients.

There can be no doubt that the chief action of these waters depends more upon the generally stimulating and revulsive operation of the baths,

than upon any specific properties which they possess; hence much discrimination and careful watching are requisite in the cases to which this heroic medication is applied. While it is well fitted to relieve a congestive state of the lungs and air-passages, especially when induced by checked action of the skin, it would be likely to do harm in most cases where there is actually existing disease of the lungs.

M. James, comparing the action of these waters with that of the Eaux Bonnes, which in these cases are, as we have seen, almost exclusively restricted to their internal administration, remarks:—

“Whilst the waters of Mont D’Or act upon the chest only consecutively, and in a circuitous way by maintaining the skin in a state of artificial plethora, the Eaux Bonnes act directly and at once upon the respiratory apparatus. It is by causing active congestion of the lung that they modify its secretions and its vitality, and determine in its textures those critical movements which the Mont D’Or waters determine towards the skin. We may easily perceive how essential is this difference, both as respects the mode of employing the waters, and the choice of patients to be sent there.”

In some cases the treatment is commenced with tepid baths, the temperature of which is gradually raised to that of the hot baths, though some patients, especially females of a nervous habit, are restricted altogether to the tepid baths of which

the duration is an hour, which slightly stimulate the skin, and render it moist.

“I have arrived,” pursues M. James, “at this conviction, that the Mont D’Or waters are powerless in the cure of consumption, not only in its advanced stages, but at the first moment when tubercle is formed. The most they may do in some cases is to arrest the progress by preventing the congestion of the pulmonary texture around the tubercle, I therefore consider the Eaux Bonnes as being much more efficacious in the treatment of this redoubtable affection.

“It is rather in cases of chronic pulmonary catarrh, where there is but little heat of the skin and no fever, that the Mont D’Or waters are really useful. At the same time that they raise the general strength, they give tone to the mucous membrane, and by a salutary derivation attract outwardly the irritation fixed on the bronchia.

“Hence it may be perceived that these waters are chiefly suited to those persons of a lax fibre and languid circulation, who require a shock to be given to their system; they are altogether counter-indicated if there has been active hemoptysis, if the heart be enlarged, or if there exists a tendency to cerebral congestion. They do not succeed in persons of a scrofulous temperament. Some asthmatic patients derive benefit from Mont D’Or, especially when the asthma is unconnected with any organic disease of the heart, and when

it is complicated with a catarrhal affection of the bronchial membrane."

The waters are also employed in cases of muscular and articular rheumatism, paralysis, and visceral enlargement, but they are not deserving of special preference over other thermal springs which are recommended in the same diseases.

The course of treatment lasts from a fortnight to three weeks; if taken for a longer period these waters would produce too great a degree of excitation.

In general it is not during the course that the benefit is experienced, but some time afterwards, when the stimulation which it induces has subsided.

"The utility of the Mont D'Or waters," says M. Bertrand, "in various affections of the respiratory apparatus is verified by time and experience; it is especially in cases of chronic pneumonia and bronchitis that they are serviceable. Of late years they have been found to be no less efficacious in cases of asthma and chronic irritation of the pharynx and larynx; many of those affections having for their principal symptoms swelling of the tonsils, more or less redness of the fauces, alteration or total extinction of the voice, are every year treated at Mont D'Or; the waters being administered in the form of entire bath, foot-baths, douches on the nape of the neck, inhala-

tion of vapour, and internally. This practice is very successful, and in nervous asthma half-baths and inhalation are mostly trusted to ; the attacks, even when very severe, are frequently removed after inhaling the vapour for a few minutes.

In 1852, the number of paying patients treated at Mont D'Or amounted to 456. Many of those affected with pulmonary complaints adopt the course of drinking one or two glasses of the water diluted with gum water or milk, using tepid half-baths, remaining half an hour or an hour in the inhaling rooms, warm douching the feet, or taking foot-baths before dinner.*

* Patissier's Report.

BOURBONNE LES BAINS.

THIS bath was termed *Aquæ Borvouis* by the Romans, of which people many remains, as medals, inscriptions, &c., have been found on the spot. It is situate seventy-two leagues south-east of Paris, in the department of the Haute-Marne, partly on the acclivity of a hill, and partly in the two valleys at its base. The northern valley is watered by a little river (*L'Apance*); in the southern, which is much narrower, rise the mineral springs. There are a civil and a large military hospital for patients, to whose uses the water is applicable, which are supported by the government. Bourbonne is a good deal frequented in the summer; about 1,200 strangers could be accommodated at once. It stands at a considerable elevation above the sea, to which circumstance, and to the peculiarity of its position, the variability of the climate is chiefly to be ascribed. Rain frequently falls, and storms are common in the summer months; the temperature of the atmosphere is likewise subject to great transitions.

There are three thermal springs; the *Matrelle*,

or Fontaine Chaude, rises in the Place, it is chiefly used for drinking, has a bitterish and rather disagreeable taste; its temperature is 46° R. The other springs are the Puisard, or Grande Source, which supplies the establishment, and the spring supplying the military hospital, which receives each season from four to five hundred patients. Few mineral waters, and none in France, except Balaruc, contain so much saline substance as those of Bourbonne. According to the last analysis, a quart of water yields 150 grains, of which 100 are common salt, 16 muriate of lime, 16 sulphate of magnesia, 15 sulphate of lime, and 3 carbonate of lime. As respects the amount and nature of its constituents, and the degree of temperature, it resembles Wiesbaden, from which, however, it differs in possessing very little gas.

The establishment is an edifice of very ordinary appearance; the position appropriated to men is called the Vieux Bain. It contains thirty-two cabinets, with separate cabinets for douches.

The Bain des Dames is of recent erection, and behind the Vieux Bain, with which it forms a parallelogram, fronting the promenade. It has thirty-three convenient bathing cabinets and douches. There are, likewise, two piscinæ for hospital and indigent patients.

The water is chiefly employed in the form of bath and douche; two or three glasses are drunk in the morning by many patients; this quantity

acts mildly, increasing the secretions of the skin and kidneys. The baths not unfrequently produce considerable excitation; in some cases they must be diluted with common water. On leaving the bath the skin is constricted and dry, as if it had been in contact with some astringent solution. The douche is taken after the bath. The water falls from a considerable height; the shock produces paleness of the skin on which it strikes, which is followed by powerful reaction, the part becoming red, hot, and extremely sensitive.

A course of these baths is more especially recommendable in cases of paralysis unconnected with apoplectic seizure; old sprains and wounds from fire-arms; they promote the healing of sinuses, and the expulsion of foreign bodies lodged in the deeper textures; they have, however, the peculiar property of softening the cartilaginous and bony structures; hence they would be unsuited to cases of fracture where the new bone is not sufficiently consolidated. The baths are, moreover, highly efficient in cases of enlargement of the liver and spleen from intermittent fevers, and many of the soldiers in the hospital labour under these affections, which they contracted while in Algeria. They are likewise recommended in rheumatic complaints, but do not merit any particular preference over other springs no less calculated to cure these affections, and which are both more agreeably situated, and possess more resources for recreation than Bour-

bonne, which would be but a dull place of sojourn for those who did not expect to benefit by the use of its waters.

The following shows the result of the cases treated, in 1850, as stated by M. Renard, the inspector:—Muscular rheumatism and neuralgia, 148 cases: 25 cured, 96 notably ameliorated, 27 unrelieved. Articular rheumatism, nodosities, gout (atonic), 150 cases: 17 cured, 94 in process of amelioration, 34 unrelieved. White swellings, 69 cases: 7 cured, 43 ameliorated, 19 unsuccessfully treated. Diseases of the osseous system, caries, &c., 42 cases: 3 cured, 46 ameliorated, 12 unsuccessfully treated. Hemiplegia, 61 cases: 3 cures, 37 ameliorations, 21 failures. Paraplegia 67 cases: 2 cures, 33 ameliorations, 32 failures. Chronic affections of abdominal viscera, scrofulous enlargements, &c., 40 cases: 2 cured, 27 ameliorated, 2 uncured.

The thermal springs of Bourbon l'Archambaud and Bourbon-Lancy are employed in paralytic, rheumatic, and other cases, to which Bourbonne les Bains and other saline waters are applicable; but as they present no inducement for English invalids to accord them a preference over other baths, I need not enter into a description of them.

PLOMBIÈRES.

PLOMBIÈRES is a small town, with a population of 2,000 inhabitants, situate in a narrow but picturesque valley of the Vosges, enclosed between high mountains, six leagues from Epinal, and is traversed by a mountain stream. The accommodation is good, but, with the exception of excursions in the surrounding country, there are but few resources for the occupation of time. Plombières is, however, a good deal frequented in the season by persons of all classes of society. The springs were known to the Romans, and were formerly supposed to contain lead, from which circumstance the name is derived. There are five principal ones which supply as many establishments; viz., the Bains Imperial, Temperé, Romain, des Capucins, and des Dames. There are likewise two vapour *etuves* (stufæ), L'Enfer and de Bassompierre; and two fountains for drinking—du Crucifix, Savonneuse, and du Bourdelle, the last-named is a chalybeate water. The temperature of the Bain Romain is 50°, of the Capucins 36°, that of the others being intermediate.

The Bain Romain consists of an elegant pavilion, with glass dome and roof, and marble pavement, containing twenty-four handsome bathing cabinets, provided with douche and injecting apparatus, and is constructed over an immense piscine, formerly exposed to the air, in which 500 persons could bathe at once. In wet weather, and in the long evenings of autumn, this establishment seems as a point of *reunion* and promenade.

The Bain Temperé adjoins the former, and comprises four circular piscine (two for men and two for women), in each of which fifteen persons can bathe at the same time (the warmest of these has a temperature of 28° , the coolest 25°); bathing and douche cabinets.

The Bain, formerly termed Royal, afterwards National, and, I presume, now Imperial, is a large edifice, comprising a piscine divided into two compartments (one for either sex), around which are bathing cabinets; two smaller marble piscine, for the use of persons of distinction, with several other bathing cabinets, and the above-mentioned vapour baths. In another portion of the building are the assembly rooms and a theatre.

The Bain des Capucins contains a large piscine, likewise divided into two compartments; the temperature of the water is higher than in the other piscine. This bath is used by an inferior class of visitors. It communicates with the Bain Temperé on the opposite side of the street, by an underground passage.

The Bain des Dames is a handsome edifice, on the ground floor of which are two piscinæ, with douching cabinets, for the use of poor and hospital patients. On the first floor is a spacious saloon, around which are sixteen bathing cabinets.

About eight hundred baths can be supplied daily from these different establishments. As the temperature is naturally too high for bathing, the water is left to cool in large reservoirs (some of which, as the Bain Romain and des Dames, being beneath the marble pavement, serve also to warm it). The piscinæ are filled several hours before the bath is taken, by which the temperature is reduced to the proper degree. The water of Plombières is tasteless, and feels oily to the touch. It is but slightly mineralised, containing not more than six grains of saline substance (chiefly soda) to the pint, and but for its higher temperature, and the greater number of the springs having different degrees of heat, it might be compared with Wildbad, Schlangenbad, and Chaude Fontaine. The water of the Crucifix, and of the Bain des Dames is used for drinking; the former being cooler is better borne by some patients. The chief internal action of the water is diuretic, though, unless taken in any quantity, it has no perceptible operation, as may be supposed from its composition. The Savonneuse is not unfrequently taken at dinner, mixed with wine.

Notwithstanding the small amount of minera-

lising principle, the baths of Plombières produce an exciting effect, doubtless owing to the temperature of the water. This stimulation is succeeded by a state of depression and relaxation in those who remain for a long period in the bath, which circumstance has been ascribed to the action of the arsenic which it is said to contain, but which, if existing, must be in such a minute proportion as to be incapable of producing any effect. These symptoms, most likely, depend upon the absorption of too great a quantity of the water at once, which takes place during a prolonged continuance of the bath, and is observed at other places.

The internal use of the water and the baths are principally recommended in cases of rheumatism, stomach derangement and debility, nervous affections of a spasmodic or erethetic character, and some cutaneous diseases. In several of these cases the action of the vapour, separately or combined with the water, is attended with marked benefit after other means have failed.

Plombières is recommended in cases of uterine disorder, especially when dependent upon a congestive state of the organ. The springs are likewise advantageous in some cases of gout of the shifting character, and connected with general irritability, in which more strongly impregnated waters would prove too exciting. In these cases the springs having the lowest temperature are preferable, their action being similar to those of

Teplitz, which they likewise somewhat resemble in point of composition.

Dr. Turck, in his work, adopts the opinions of his brother with respect to the nature of gout, to which I have referred at some length in another work ("On Gout, Gravel, and Stone"), and, in accordance with these opinions, has promulgated a theory of the special action of the Plombières waters in this disease.*

* "Du Mode d'Action des Eaux Minero-Thermales de Plombières ; d'apres les Doctrines Electro-Chimiques."

LUXEUIL.

THIS bath is not far from Plombières ; being situate in a plain at the foot of the Vosges ; several remains have been discovered on the spot, indieating that the waters were used at the epoeh of the Roman domination : the piseinæ having been, it is said, repaired by Cæsar. The village eonsists of a single long street, and presents but little resouree though there are some agreeable walks and rides in the environs.

The establishment is a handsome strueture, surrounded by avenues of trees ; a eentral saloon separates the two lateral peristyles. It eonsists of seven divisions—the Bains des Pauvres, Cuvettes, Grand Bain, Bain Gradué, des Fleurs, des Dames, and des Benedietins, and comprises six piseinæ, sixty bathing cabinets, with douehe and vapour bath apparatus. Behind the establishment a vast reservoir serves to eolleet and cool the water down to the requisite degree for bathing.

There are eleven prinieipal springs, which in point of mineralisation and temperature, greatly

resemble those of Plombières; though they contain the muriate instead of the carbonate of soda. The water is kept flowing through the piscinæ in which both sexes associate during the bath, each bather being dressed in a long flannel gown.

The waters of Luxeuil like other slightly mineralised ones, are serviceable in some forms of rheumatism and gout in unsusceptible subjects, and also in slight derangements of the digestive apparatus and various nervous affections, in which rather a sedative action is required. They are less frequented than they otherwise would be, if further removed from Plombières.

In 1852, as in the preceding years, nervous affections were the most frequent; next in frequency were cases of uterine disease, disorder of the digestive organs, and enlargement of the abdominal viscera; and lastly paralysis.

Of 60 nervous affections 15 were cured, 30 ameliorated, in 16 no benefit resulted from the treatment. Of 46 cases of uterine disease, including leucorrhœa, 13 were cured, 28 ameliorated, to which conduced the use of the chalybeate spring. The humidity of the season was adverse to rheumatic patients; out of 43 cases, there were only 8 cures. Of 40 cases of derangement of the digestive apparatus, 11 were cured, 20 were relieved, and 9 remained in the same state as before. The average duration of stay was 25 days.

Near Luxeuil is Bains, which possesses thir-

teen springs, of various degrees of thermality, which supply two bathing establishments, the Bain Vieux, and the Bain Neuf. They are likewise slightly mineralised, and are chiefly employed as baths in the class of cases already specified.

NERIS.

THE hamlet of Neris consists of about eighty houses, with a population of 1,000 inhabitants, and lies on the high road from Moulins to Limoges, within a few hours' drive of the railroad, in a healthy and agreeable position. The name is said to be derived from Nero; be this as it may, the place must have been one of some importance in the time of the Romans, the remains of an amphitheatre, baths, &c., having been discovered. There are four springs, viz., Le Puits de la Croix, Puits César, Puits Carré or Temperé, and the Source Nouvelle, which rose to the surface in 1757, at the time of the earthquake at Lisbon. The Carré is a cool water of about 17° R. The temperature of the other springs ranges between 29° and 42° .

The water is clear, inodorous, and tasteless, and has an unctuous feel; it contains small proportions of carbonic acid, carbonate, muriate, and sulphate of soda, and a vegeto-animal matter (*confervæ*), which forms a deposit in the basins, and is sometimes used medicinally as a local application.

In point of chemical composition and amount of salts, this water may be likened to Schlangenbad, though the temperature is higher.

The bath establishment is only finished on one side, having been commenced on too large a scale. There are four piscinæ (two for either sex) ; two of which are very large, and of lower temperature, serve for swimming baths ; the smaller ones have a higher temperature, and the duration of the bath in them is consequently shorter than in the former. There are likewise fifty-two bathing cabinets supplied with douches, a *vaporarium* in which patients inhale the vapour from the Puits César, and cabinets for vapour baths, general or local.

The waters are calculated to be of service in several of the cases which have been already mentioned under the former heads, especially in nervous disorders ; neuralgia ; rheumatic, gouty, or paralytic affections in persons of an irritable habit, or accompanied by an inflammatory or congestive tendency ; cutaneous diseases, as prurigo, acné, &c., in which the deposit from the waters produces a good effect. In the more long-standing and intractable forms of skin disease, it is scarcely necessary to observe, that one or other of the sulphurous springs would be infinitely preferable to the slightly mineralised ones, from which only a temporary relief could be expected in most cases. Some of the houses in Neris have baths to which the water is conducted through

pipes from the springs. The *douche ascendante* is used in some cases of functional derangement of the pelvic viscera.

The government has accorded 70,000 francs for the purpose of finishing the establishment. The hospital contains 76 beds; 399 patients were treated in this edifice in the course of the season. The paying patients amounted to 963. The greater number, four-fifths, being affected with rheumatic and neuralgic complaints, and nervous disorders, including paralysis. According to M. Sibille's report, of 174 cases of neuralgia, 35 were cured, 96 relieved; of 119 cases of nervous rheumatism, 15 were cured, 66 ameliorated.

ENGHIEN.

ENGHIEN has a station on the northern railroad, its proximity to the metropolis causes it to be greatly frequented by the Parisians, especially on holidays ; its water is likewise largely imported, and is not unfrequently prescribed by physicians of eminence. The village is situate in the valley of Montmorency, about a league distant from St. Denis, and is surrounded by a delightful country, abounding in pleasant walks and rides. The hotel and lodging houses are commodious ; there is an extensive park, a piece of water provided with sailing and rowing boats, a large bath establishment, and a smaller one attached to the Hotel de la Pechèrie. A late distinguished Parisian medical writer who published a *brochure* on Enghien, speaks of the locality in the following glowing terms, “Everything combines to charm, attract, and retain the visitor ; a delightful position, a lake having an extent proportioned to the scenery, elegant houses and gardens admirably laid out ; everywhere flowers, trees, promenades, shade, beautiful effects of light, a something which

recalls to mind a happy country and the most favoured elime.”*

In the neighbourhood are several objects of interest, to which excursions may be made. The springs were discovered about the middle of the last century by Father Cotte, curé of Montmorency. There were formerly employed the Source Vielle, Source Nouvelle, and la Peebèrie ; there are now four besides the last mentioned, having the names Cotte, Deyeux, de la Rotonde, and Bouland.

The superflux from these springs flows into a spacious reservoir, whence the water is conducted through zinc tubes to different parts of the establishment. It is cold, and consequently requires to be warmed up to the requisite degree for bathing, which is effected by means of a steam apparatus, so that its properties are but little impaired.

The water has an insipid sweetish taste, and exhales a strong sulphurous odour. It is speedily decomposed on exposure to the air, and is of the character which M. Fontan has termed accidental sulphurous, deriving this property from the decomposition which is effected in its passage by contact with organic or vegetable matters. The saline basis is lime, and, according to the analysis of M. Henry, the sulphur exists in the state of sulph-hydrate of lime mixed with free sulph-hydric acid gas. The amount of sulphurous impregnation has varied considerably at different times. Persons interested in keeping up the

* “Une Saison aux Eaux d’Engbien, par le Dr. Reveillé-Parisé.”

vogue of Enghien have endeavoured to prove that its water is more sulphurous than the waters of the Pyrenees, as Barèges and Luchon, which are the most strongly impregnated with this principle; on which point M. James remarks, "The parallel which has been attempted to be established between these springs and those of the Pyrenees, must turn to the advantage of the latter. The waters of Enghien contain salts of lime and no *barégine*, which renders them rough to the skin. In order to employ them in the forms of bath and douche their temperature must be artificially raised, which always alters more or less their elements. On the other hand, the Pyrenean springs contain the salts of soda and much *barégine*, to which substances they owe their unctuous properties; as to their temperature, it is rather too high than too low. Lastly, we should never be able to obtain from the former the admirable therapeutical effects which may be obtained from the latter."

Although they cannot be compared with the Pyrenean springs as regards the results to be expected in cases where thermal sulphurous waters are more particularly indicated, the Enghien springs are, nevertheless, highly serviceable in rectifying various disordered conditions of the health. Drinking is usually combined with bathing, and with douche and vapour baths in appropriate cases. In some local ailments and neuralgia shampooing constitutes part of the

treatment, and sometimes the douche of alternately warm and cold water (*douche ecos aise*) is employed. It is also sometimes deemed advisable to dilute the water with milk before drinking. The action of the bath is exciting; the circulation becomes accelerated, the face flushed, and sometimes a tendency to cerebral congestion is induced, on which account the bath is occasionally diluted with common water. The activity of the skin is likewise increased, this organ is strengthened and rendered less susceptible to atmospheric impressions. A solution of gelatine is often added to the baths as a substitute for *baregine*.

At the commencement of the course some disorder of the digestive apparatus, with constipation, not unfrequently ensues, requiring the use of laxatives. The waters are counter-indicated in persons of irritable or plethoric habit, and they are not suited to gouty persons; on the other hand, they are more particularly adapted to individuals of a lymphatic or scrofulous temperament, with puffiness of the cellular texture, pallor of the skin, and other indications of an impoverished condition of the blood. The cases in which the Enghien waters are calculated to render service, are scrofulous affections; several cutaneous diseases, in which an aggravation of the symptoms often ensues, and is succeeded by amelioration or a cure; rheumatic and paralytic complaints, leucorrhœa, and disorders of the digestive

apparatus of an atonic character, to which the inhabitants of large cities are so frequently liable.

These waters are likewise efficacious in some cases of chronic laryngitis and bronchitis, the cough and expectoration gradually diminish and at length disappear.

“The population of Enghien in winter is only 360 souls; during the season it is frequented by from 1,200 to 1,500 bathers and drinkers. About 800 visitors daily arrive, attracted by curiosity, or to spend part of the day, and about 4,000 on Sundays. The number of bathers has not increased of late. Visitors lodge either in the thermal establishment, or in the neighbouring hotel, which is provided with 100 rooms commodiously furnished.”*

* M. Patissier's Report.

PART II.



THE BATHS

OF

CENTRAL GERMANY AND SWITZERLAND.

FIRST DIVISION.

BATHS OF CENTRAL GERMANY.

I. THERMAL SPRINGS.

CARLSBAD.

THE position of Carlsbad is in the highest degree picturesque, and agreeably impresses the stranger on his arrival. It lies along the banks of the little river Tepel, in a narrow winding valley, enclosed between lofty hills clothed to their summits with the pine, beech, and ash, and on which numerous paths easy of ascent have been constructed, leading to points which command extensive views of the surrounding country. There are several houses of entertainment within a short distance, situated in beautiful spots, to which visitors are in the habit of resorting in the afternoon to take tea or other refreshments, and

the beauty of the environs is a strong inducement for more distant excursions. The chief point of re-union is the Wiese, where the valley is somewhat wider, so as to admit rows of trees and booths between the houses and the river. At the end of this promenade are the two principal restaurateurs and public rooms, the *salles de Saxe* and *de Bohême*, where dinners are served *à la carte* or at a fixed price per head, and where concerts are occasionally given.

Carlsbad offers but few resources for the amusement of the idler, being chiefly resorted to by invalids. There is not that indiscriminate mixture of society which is met with at other baths, where the goddess of pleasure has numerous votaries. There are no balls; and games of hazard, which at some other places attract a crowd of adventurers, are not allowed, neither are there tables-d'hôtes; and the dishes served up at dinner are generally plain, many articles which would be likely to interfere with the action of the waters being prohibited by the medical censors, whose authority, if not openly exercised, is at least tacitly admitted by hotel keepers and *traiteurs*, so that invalids have seldom the opportunity of committing those errors in diet, which so frequently render nugatory a course of mineral waters.

On the right bank of the river rises the Sprudel, exhibiting to the beholder the phenomenon of a perpetual *jet d'eau*, as thick as a man's arm, and

varying from three to five feet in height. The immediate neighbourhood of the spring is constantly enveloped in vapour, and an odour is perceptible resembling that of boiled meat. On the edge of the basin into which the water flows, is observable a thick green slimy substance which has been ascertained to consist of innumerable animalculæ of a similar nature with the *oscillatoria* found in several other thermal springs, the presence of which has been adduced by some authors in corroboration of the opinion of the vitality of mineral springs.

Close to the Sprudel rises the Hygea, which supplies the adjoining baths. On the opposite side, and lower down the river, are the three other springs principally used, viz., the Muhlbrunnen, Neubrunnen, and Theresienbrunnen. Besides these are several others, as the Schlossbrunnen, Bernardsbrunnen, &c., which are comparatively little used. A new spring arose a few years ago in the market-place; it does not, however, materially differ from the others in its properties. Close to the above-mentioned three springs, and above the river, is a covered gallery where the greater number of water-drinkers meet between five and seven in the morning, an excellent musical band being always in attendance at these hours. Another is also stationed at the Sprudel.

The Neubrunnen and the Muhlbrunnen contain $41\frac{1}{2}$ grains of solid substance to the pint; the

Theresienbrunnen only $36\frac{1}{2}$. The two latter are, however, the most gaseous, they contain about 15 cubic inches of carbonic acid. The temperature of the Sprudel is 59° R., Neubrunnen 50° , Muhlbrunnen 43° , Theresienbrunnen 43° . The New Market spring has an intermediate temperature between the Neubrunnen and Muhlbrunnen. According to the analysis of Dr. Wolf, of Prague, it contains two grains of sulphate of potass. He also observes, that the quantity of carbonic acid in the Sprudel is not sufficient to change the carbonates into bicarbonates, which is the case in the other springs, and that in proportion as the temperature of the springs diminishes, the quantity of the bicarbonates increases. In the Theresienbrunnen there are still three cubic inches of free carbonic acid remaining after the saturation of the alkaline base.

There are no mineral springs which have stood higher in general estimation than those of Carlsbad, and none which since their first discovery have better sustained their reputation, through successive generations, nor are there any on which so much has been written. The first work of importance respecting them, which appeared as far back as 1522, was written by Dr. Payer, and was termed *Tractatus de Termis Caroli IV.*

The work of Summer appeared about fifty years later. At this time the waters were chiefly used for bathing, and Summer gives a description of the two large basins or piscinæ, one for men, the

other for women, who bathed in common. There was besides a separate bath for persons with cutaneous complaints, wounds, &c. He also remarked what several others have subsequently stated, that the Muhlbrunnenn was less heating in its action than the Sprudel, and he was the first who made known the composition of the waters. Among the other works published before the present century may be mentioned those of Professor Schackern, who wrote three dissertations: first, on the internal use of the Carlsbad waters in gout; secondly, in diseases of the stomach and bowels; the voluminous work of Dr. Springfield; and lastly, the valuable and scientific one of Dr. Becher, which appeared in 1772.*

There is so much truth and point in what Becher states to be the general origin of most of the diseases in which the Carlsbad springs are calculated to be of service, that I shall take the liberty of transcribing his remarks: "When a man follows an indolent mode of living, and enjoys himself a good deal in regard to eating and drinking, the food which, in a proper quantity and quality, would produce a nutritive juice of a mild and homogeneous nature, which carried into the blood would restore the strength, is transformed into a slimy, tenacious, and acrid juice, which does not form with healthy blood an homogeneous mixture. It is not immediately, nor even in the first years, that the depraved state of the

* "Neu Abhandlung von Karlsbade."

juices causes any particular inconvenience to the individual, which might warn him of the approaching evil. He still finds himself tolerably well although the blood becomes from time to time more vitiated, till at length the corruption of the juices arrives imperceptibly at such a degree, that it induces morbid conditions in the solid parts, and now the individual will not fail to experience the effects, as the acridity stimulates the sensible and already weakened vessels to increased activity, and the tenacious blood is no longer able to penetrate the finer kind of vessels; whence arise obstructions, which take place chiefly in the abdominal viscera, and from neglect, often rapidly increase. The juices, which stagnate in the obstructed vessels, fall at last into corruption. They become decomposed, corrode the solid parts, and occasion irremediable changes in the organs. The glands become hardened almost without hope of their again becoming resolved. The obstructed bile hardens in the gall-bladder into gall-stone. The urine, which remains a long time in the excretory vessels, lays the foundation for stone in the kidneys," &c.

Becher considered the action of the Carlsbad waters under five heads: 1st, As the means of remedying weakness in the primæ viæ, and freeing them from long accumulated impurities. 2nd, As remedial means well suited to persons leading a sedentary life, who eat and drink a great deal, and labour under symptoms of derangement of

the digestive organs with habitual constipation. 3rd, As a means of resolving and removing abdominal obstructions, especially of the liver; and jaundice, and hypochondriasis resulting from this cause; as also swellings in the lymphatic glands; piles from obstructed circulation through the liver; deranged menstruation from the same cause, or from inactivity of the capillaries of the uterine system. 4th, As a means of freeing the blood from its acrid parts, which it causes to be thrown off on the extremities, or by the surface of the body; (a mild attack of gout being consequently in some cases induced by them, the person remaining free from subsequent attacks, for a long period;) and as a means of clearing the urinary passages from stone and gravel, though he acknowledged that the water was not capable of dissolving large calculi, but he stated that it was of great service in carrying off small calculi and gravel, and in remedying the calculous diathesis. 5th, As an efficacious remedial measure in several other diseases, the origin of which is obscure.

Becher warned patients against the habit of too copiously drinking the waters, which are then apt to cause unpleasant distension and weakness of stomach, and says, "It is a mistake to think that the beneficial action of the Carlsbad water consists principally in the increased excretion from the bowels." Kreysig, De Carro, and others, also add their testimony, that various diseases are not

unfrequently cured by the Carlsbad water without its inducing increased action of the bowels. When, however, constipation exists so as to produce inconvenience, a mild aperient pill, or the addition of a little salts to the first glass of water, may be recommended. Among the writers of eminence, who have more recently treated of the Carlsbad waters, may be enumerated, Hufeland, Kreysig, Clarus, Osann, and Vetter; and of the local practitioners, De Carro, Ryba, Hlawaczek et Fleckles. Innumerable articles have also been published in the medical periodicals, respecting the virtues of these springs.

Kreysig, speaking of the solvent effects of the Carlsbad waters, states that he has frequently observed them to induce constipation, which did not previously exist, and further says, "A phenomenon which I have constantly remarked, is that the disposition to obstructions which takes place during the use of the waters, is always accompanied with a swelling of the abdomen, and I cannot doubt that this is the effect of the water, which, after having penetrated into the economy, begins by softening and rarefying the organs which are often previously shrunk up, and, as if hardened, arouses from their torpor the humours which are almost concreted in their vessels, or in the parenchyma, and reduces them to a fluid state. Many patients have to pass through this process; it begins sooner or later, at the end of a week or a fortnight, and lasts a longer or shorter period, according to the resistance which

the waters experience. This course of nature, and this action of its *vis medicatrix*, may be observed in some external parts; in cases of glandular indurations in the interior of the body, they may be recognised by means of examinations frequently repeated. The diseased organs, particularly the glands, gradually increase in size, become sensible, and even painful to the touch, and afterwards gradually soften and diminish, until they altogether disappear. The abdominal organs seem at this period to be in a state of softness like wool. The act of evolution, and of softening with swelling, appears to be opposed to the evacuating function of the bowels, and the physician ought to understand the voice of nature, and to know her wants, in order to direct the contest to the advantage of his patient. A great number of patients scarcely notice this period, others pass through it in from three to seven days, in others it may last for weeks, until the end of the course, which even then may be without result. Many patients consequently allow themselves to be intimidated, and are afraid to continue the waters, believing that they are not suited to their condition, because they lose their appetite, and their digestion is badly performed: it is thus, that the state which should necessarily accompany the evolution of the evil, and which is only a degree of transition from the disease to the cure, is often mistaken for a debility of the stomach. It is not, however, a weakening of the stomach from the effect of the waters,

but consists in a temporary diminution of the functions of the bowels and of the excretions ; and the re-establishment of the internal conditions of these functions is preparing during this interval. When the evolution has attained its maximum, abundant evacuations take place without difficulty, and a general amelioration is the consequence ; the patient feels his strength increase, the head becomes free, his good-humour returns, his appetite is restored, and with it, his digestive powers.”*

These critical effects do not take place in many cases ; in some instances they occur some weeks, or months after the patient has discontinued the use of the waters ; and several, who leave the place no better, are often disappointed in their action, until they experience a crisis, and the amelioration which succeeds it. Dr. De Carro says, “ Whoever has experienced at Carlsbad a regular crisis, will never more question the power of its waters, the revolution they cause in the whole system, nor the artificial disease excited by such perturbation—the Germans call it very properly a bath-storm (Bad-Strum).”†

As further proofs of the solvent powers of the Carlsbad waters, it is stated that during their use encysted tumours have disappeared, nasal polypi have spontaneously fallen off, that bony prominences diminish, and that previously fractured bones become softened at the point of fracture.

* “ De l’Usage des Eaux Minérales.” Paris, 1829.

† “ Essay on the Waters of Carlsbad.”

Some similar effects have also been observed from the use of the artificial Carlsbad waters in Struve's establishments.

The supply of water yielded by the different springs is very abundant; the Sprudel alone yields 330 pounds a minute; the taste of the water is slightly saline, and is not unlike that of Wiesbaden; though generally acting upon the bowels, its action does not produce debility, even when the course is long continued; but on the contrary, an increase of appetite and strength are a frequent result. It also promotes the urinary and cutaneous secretions, more especially when it does not affect the bowels. In some persons, when first taken, it occasions constipation, and tendency to cerebral congestion; even a single glass occasionally produces vertigo and other unpleasant symptoms. As the system becomes saturated with the water, symptoms peculiar to a state of plethora are often induced, such as feverishness, fulness of the pulse, agitated sleep, heaviness of the head, pains in the abdomen, or in the region of the sacrum, with hæmorrhoidal tumours or bleedings, a sense of oppression of the chest, epistaxis, &c.

There is not much difference between the springs, with respect to the amount of their constituent parts, the chief difference being in their temperature. The Sprudel has even a higher temperature than the Kochbrunnen at Wiesbaden, and is the hottest spring in Germany. On this account

the opinion is generally entertained, both among practitioners and patients, that its operation is more exciting than the other springs, which are considered more aperient, and are not unfrequently recommended previous to its employment; but this more powerful action of the Sprudel is sometimes a matter of individual idiosyncrasy, as some delicate and excitable patients bear it very well when the other springs disagree. Dr. De Carro is of opinion that one spring is not more exciting or stronger in its action than another, and says on this point, "If we appeal to practical experience, free from prejudice, we shall perceive that the difference in the effects produced by the different springs is peculiar to the individual; that the same water which purges one, may constipate another; that frequently the spring which causes congestion and vertigo in one individual, establishes the most perfect equilibrium in the functions of another; that notwithstanding the invariability of the physical and chemical qualities in our springs, their effects often vary from one year to another in the same person. It results from this—that each patient has his particular history to relate; that he makes an aphorism, or general maxim, of what he observes with respect to himself, and that each spring has its advocates as well as its depreciators."* On the other hand, Dr.

* "Du Choix des Sources," in the Almanach de Carlsbad (1832).

Schwartz says, with reference to this subject, "Although according to the most recent chemical investigations, the springs do not materially differ from each other in the quantity or quality of their contents, but only in the higher or lower degree of their temperature, yet it is just this difference of temperature which not only affects the elastic tension of the fixed and volatile parts, but also their reception into the system, and favours and modifies the subsequent reaction, which effects are lessened by cooling the springs, on which account the Carlsbad water is not exported."*

Comparatively few patients use the baths of Carlsbad, though formerly the waters were used almost exclusively for bathing, and patients frequently used to remain six or eight hours in the bath. Becher, speaking of the neglect into which bathing had fallen in his time, observes, that as the springs were used during one hundred and fifty years exclusively for bathing, they would certainly not have preserved their reputation, and occasioned the building of the town, if the employment of the baths had been either useless or prejudicial. He recommends them in indolent ulcers, old injuries and wounds, cutaneous disorders, gouty cases, chronic swellings, contraction and stiffness of the limbs, abdominal obstructions, &c. Baths have, however, been more used of late years, and there is no doubt that in many cases

* "Allgemeine Heilquellenlehre." •

they would be equally efficacious as at other thermal springs, though one reason why they cannot be used in some cases at the same as the patient is going through a course of drinking, depends doubtless upon the stimulating property of these waters, which, if used simultancously externally and internally, would produce too high a state of excitement, and thus retard rather than promote the cure. The accommodation for bathing is, however, restricted; at the Sprudel there are eighteen bathing cabinets, with douche and vapour baths; the vapour, ascending directly from the springs, is used with advantage in many local affections, though its effects do not in all probability materially differ from the vapour of common water artificially heated; there are also six baths supplied by the Muhlbrunnen; the hospital spring is likewise used for bathing, not only by poor persons, but by others, and some have baths in their own apartments.

The use of the Carlsbad waters is counter-indicated in very plethoric individuals, and those disposed to active inflammations, hæmorrhages, and discharges; in states of great debility of the muscular and nervous systems, diarrhœa, profuse sweatings, hæmoptysis, indurations so far advanced as likely to terminate in suppuration, or which are of a scirrhus nature; in the tendency to consumption or dropsy, and also in scorbutic and syphilitic diseases, which they generally aggravate.

The cases in which these waters are most ap-

plicable, may be inferred from the preceding observations, to be chiefly certain diseased states of the abdominal and pelvic viscera, especially *engorgement* and obstructions of the liver, the system of the vena-portæ, the spleen, mesenteric glands, uterus; and the consequences which these morbid conditions frequently entail, as gouty affections, urinary and biliary calculi, hæmorrhoids, hypochondriasis; but as several other mineral springs, very different in their nature from those of Carlsbad, are also recommended in these diseases, it may be as well to say a few words respecting some particular conditions which more especially indicate the preference to be given to the Carlsbad waters over others. It does not follow because a person labours under an obstructed and indurated state of the liver, or is afflicted with gout, that he should necessarily be sent to Carlsbad, which in many of these cases would do more harm than good; hence may be seen the danger of recommending empirically any particular class of remedies for diseases abstractedly considered, without an inquiry into the peculiarities of individual cases; and also of invalids acting on their own responsibility, or on the advice of other sufferers and non-professional persons, who are not qualified for investigating these individual peculiarities. Of this misapplication, numerous examples are every year seen at the different baths. Such persons, whether acting from a want of confidence in their medical

advisers ; from a mistaken supposition that, if mineral springs do no good, they cannot do harm ; or from a misplaced economy, frequently do their health great injury, and may not inaptly be compared to the bear in the fable, who, in attempting to play on the harpsichord,—by the roughness of his touch,—soon broke all the strings, instead of eliciting harmonious sounds. It is by these persons also, that particular mineral springs are often abused, as having been of no service, or as having done them more harm than good, when in point of fact it is not the springs that are to blame, but the individuals themselves for employing them *mal-à-propos*, and in an improper manner. There is no class of remedies calculated to do so much good in many chronic diseases as a well directed course of mineral waters, and none more likely to be prejudicial when improperly used, especially if the springs be energetic in their action, as those of Carlsbad.

A person of full habit, ruddy complexion, and active circulation, in whom there might exist a disordered state of the digestive powers, with hepatic *engorgement*, requiring for its removal a course of mineral waters, would, in general, be a case less suited to Carlsbad than for the use of one of the cold saline aperient springs, as Homburg, Rippoldsau, or Kissingen ; or where the quantity of gas contained in these springs would be likely to disagree, and a more active aperient effect is required to reduce the general plethoric

state of the system, the waters of Pullna, or Sedlitz, might be substituted. With many persons also, especially of the female sex, of considerable *embonpoint*, leading an inactive life, who are liable to become flurried on slight occasions, and are subject to irregular determinations of blood to particular organs (marked by flushings, headaches, and coldness of the extremities), the Carlsbad waters, though they might be indicated for existing disease of the digestive organs, would in many cases disagree, and a course of tepid bathing in an alkaline or saline spring, with the occasional use of the douche, and the internal exhibition of a water like Marienbad, or one of those which I have named, would be more likely to be productive of good effects. On the other hand, Carlsbad would in general be best adapted to those cases when the person is of spare habit, languid circulation, sallow complexion—accustomed to sedentary occupations or to those requiring much mental application;—as is the case with many residents of capital cities engaged in commereial, political, or literary avocations, and who at the same time often indulge freely in the pleasures of the table, by which derangement of the digestive organs and obstruction of the circulation through the abdomen are induced, with their consequences, liver disease, inactivity of the functions of the bowels, piles, &c. Such persons have very often rendered their complaints more intractable by the quantities of medicine they have been accustomed

to take, which, affording them temporary relief, enables them to continue for some time longer their prejudicial habits. The same may be said of those individuals whose digestion has become impaired, who have liver induration, and other local complaints arising from a residence in tropical climates. In such cases, the solvent and alterative action of the Carlsbad waters is often productive of the best effects in dispersing the visceral enlargement, and in improving the general health. When there exists in such persons a degree of irritability of the system, which the Carlsbad waters might be likely to increase, baths and douches of the Wiesbaden water, either combined or not with its internal use, or that of a cold aperient water, according to circumstances, will often be preferable to Carlsbad; and also when active effects upon the bowels, by critical discharges, are not required.

But it is difficult and often impossible to specify in a definite manner the particular states or forms of diseases to which Carlsbad, or any other active mineral water, would or would not be suited. So much depends on the peculiarities in individual cases, that only general indications can be laid down, liable to many exceptions. As the experienced author I have before quoted observes, "In order to determine with exactness the cases in which the Carlsbad waters may be used, the physician should be familiar with the art of well examining the diseased individual, to be able to

ascertain with precision the degree of importance which attaches to the morbid condition of internal parts. He must, in the second place, be able to appreciate with certainty and precision the special relation of the waters with the living body, and their mode of action, such as constant experience has taught us."

In the forms of atonic gout which affect individuals of a bilious temperament and sedentary habits, combined with much stomach and liver derangement, the Carlsbad springs will often be better calculated than any others to remove the disease, and prevent its recurrence. They would, however, not be so applicable to the generality of cases of gout in persons of full habit, addicted to free living, whose pulse is full, in whom the attacks take place regularly, and are succeeded by an immediate return to health; neither would they be so well adapted to the kinds of gout termed nervous, occurring in irritable subjects, when the attacks are irregular, shifting suddenly from one part to another. In the gout of elderly people, who are in other respects in tolerable health, whose digestion is not materially impaired, in whom the disease is hereditary, and often accompanied with the deposition of calcareous concretions in the joints, Carlsbad would be less applicable than Wiesbaden, which in similar cases is productive of the most marked beneficial results. In young persons also, where, in conse-

quence of hereditary tendency, the disease has developed itself at an early period, I should consider the Carlsbad waters inapplicable, and the Wiesbaden baths as a means better calculated to procure a permanent cure.

In cases of gravel and stone arising from excesses in the pleasures of the table, in persons of the middle periods of life, and whose digestive organs are a good deal disordered, a course of Carlsbad waters, by remedying the disposition upon which the formation of the calcareous concretions depends, would be a very probable means of preventing a recurrence. Their action, though it cannot be said to have a direct lithotriptic property, yet frequently causes the expulsion of small calculi. In the majority of calculous complaints, however, not complicated with much derangement of digestion, the Carlsbad waters would not be so recommendable as the more alkaline ones of Vichy, Bilin, or Fachingen, which might also be employed with advantage in some cases after a stone had been broken by the operation of lithotripsy. A case of the effects of the Carlsbad waters, in causing the expulsion of fragments after this operation, occurred in the person of Dr. Bigel, of Warsaw, and is related in one of the Carlsbad almanacks.

Hypochondriasis, in its material form, is one of the complaints in which Carlsbad would be productive of the best effects, especially when con-

nected with much derangement of the digestion, hepatic obstruction, and constipation, and when the disease has been of long duration. In some of these cases, as in simple abdominal and other diseases, little or no benefit may be experienced the first season, but by subsequent attention to the mode of living, and by returning to Carlsbad a second or even a third season, if there is reason to expect advantage may be derived, the disorder may often be overcome. The same may be said of decided melancholy, in several cases of which these waters have been highly servicable.

Several periodical diseases of a nervous character, as hysteria, neuralgia, and tic, will often be removed by the use of the Carlsbad waters, particularly when connected with a disordered state of the digestive organs. Other mineral waters may be equally efficacious in these complaints, and also in others for which Carlsbad has been recommended, as chlorosis, scrofula, suppressed or disordered menstruation, sterility, etc. which would require minute inquiry into the various co-existing circumstances in order to form an opinion as to the kind of spring most likely to be efficient in any given case.

Analysis of the Sprudel by Berzelius. 1822.

	In 16 of water.
Carbonate of soda . . .	9·69500
Muriate . . .	7·97583
Sulphate . . .	19·86916
Carbonate of lime . . .	10·05005
Fluate . . .	0·02458
Phosphate . . .	0·00169
Carb. strontian . . .	0·00737
Earthy phosphate . . .	0·00246
Silex . . .	0·57715
Carbonate of iron . . .	0·02780
Carbonate of manganese . . .	0·00645
<hr/>	
Grains . . .	49·60719
Carbon. acid, cubic inches . . .	11·850

TEPLITZ.

THIS small town lies in an open and agreeable valley, bounded on the north and east by the chain of the Erzgebirge hills. At each extremity of the principal street, is an open Place; in one of these stands the Town-house; in the other, the Schloss, or château of the Prince de Clary, to whom the territory belongs. The grounds behind the château are extensive, laid out *à l'Anglaise*, and are open to the public. The principal alley, being the usual promenade of the Teplitz society, presents an animated scene during the season, and a musical band is in attendance at stated hours; adjoining are public rooms for restauration, occasional balls and concerts, and the table-d'hôte, which, with that at the Poste, are the only ones in the town; it being the custom, as at Carlsbad, to dine *en famille*, or *à la carte*. Being a great place of resort for princes, diplomatists, and the *haut ton* of Germany, there is but little general association; Teplitz would not, consequently offer much resource for the amusement of a stranger, unless he had previously acquaintances

among the Germans. It is therefore seldom resorted to by the English. There is little to interest in the town itself, except the baths, which are magnificent, and better arranged than in most of the watering-places which I have visited.

The principal bathing-house, the Herrenhaus, where the late King of Prussia was in the habit of residing during the summer season, belongs to the Prince de Clary. The ground floor of the edifice is disposed in several elegant and spacious baths, formed of porcelain tiles of various colours; part of each cabinet, being separated from the bath by a curtain, serves as a dressing-room. At the end of the garden, behind the house, there is a semicircular colonnade, with a portico, beneath which rise three or four springs; the one being the Trinkquelle, or drinking-spring; the other, the Augenquelle (eye-spring). The number of drinkers at Teplitz is, however, comparatively small, bathing being the essential part of the treatment.

The new Stadtbad, or Town-bath, is likewise a handsome building, containing twenty-two commodious bathing cabinets, and two or three large marble ones, around a central reservoir in which the water is cooled. On the first floor is a spacious promenade room. These baths are supplied by the Hauptquelle, together with the adjoining piscinæ or public bath for men, which is a lofty and spacious *local*, in which fifty persons could bathe at the same time. About sixteen were in the bath at

the time of my visit; several of them were undergoing the operation of cupping with small tin cups about the size of a liqueur glass. This is a common practice with many patients of the poorer classes, who also frequently remain a long time in the water, which in the public baths is of its natural temperature. Another of these baths is the Furstenbad (Prince's bath), so-called, not from its being exclusively appropriated to the higher classes, but because it also belongs to Prince Clary. The bathing cabinets are equally elegant and convenient as in the other establishments. Here, likewise, is a public bath for women, which is more dark and confined than the men's. There is also in the town a Jews' bath. The price of a private bath is eighteen kreutzers (about sixpence) in the morning; in the afternoon it is only twelve.

The adjacent suburb, Schonau, possesses baths, equal if not superior in elegance to the town baths. They are, 1st, The Steinbad, consisting of a central vestibule where the spring rises into a large oval basin, and on either side bathing-cabinets: the water also rises directly into some of the baths through a fine layer of sand as at Wildbad, and remains constantly flowing during the bath, which is taken at the natural temperature. 2nd, The Templebad, a circular edifice, close to the former, with six baths of a triangular form. 3rd, The Schlangenbad, a new edifice with handsome façade and portico; the baths being

constructed (as at other new establishments) of tiles of various colours, which give them a light and cheerful appearance. But the handsomest of the new erections, is, 4th, the Neubad, which has superseded the old Schwefelbad. This edifice is three stories in height, has a considerable extent of façade, and is divided into two equal parts, with a central hall or vestibule supported by beautiful composition columns, in imitation of marble, whence wide staircases conduct to the apartments, which are handsomely fitted up for accommodating either families or single persons. A single room lets at from three to six dollars a-week, so that it will be perceived that the expense of living and bathing is not very great at Teplitz. The roof of the building forms a terrace, commanding a delightful view of the town and environs, with the whole range of the Erzgebirge, and the Schlossberg, with the ruin on its summit. The baths on the ground floor are as convenient and well arranged as those at the Herrenhaus.

There are several hospitals at Teplitz, viz., 1st, the Town hospital; 2nd, the Austrian Military Hospital, in which three hundred soldiers may be accommodated at the same time, each officer having a private room. On an average, each patient uses the bath for a month, so that one thousand two hundred may obtain relief during the season; 3rd, the Prussian Military Hospital; 4th, a Civil Hospital for poor persons of any country, containing about fifty beds; and 5th, a

small hospital founded and supported by Prince Clary.

At the time of the earthquake of Lisbon, the principal spring at Teplitz ceased to flow for about a minute, and then burst out with such violence as to overflow the basin, the water being in a state of fermentation, of a higher temperature than usual, and of a deep red colour. When it had again become clear, a quantity of red oxide of iron was found deposited at the bottom of the basin. Neither the springs of Schonau nor those of Carlsbad were in the least affected.

In all the springs of Teplitz the constituent parts are the same. They may in fact be considered as so many outlets of the Hauptquelle, the farthest removed from which is the coolest. The Hauptquelle itself yields eight hundred and four cubic feet of water in an hour, its temperature at the source is 39.5° , that of the other spring in the town is 38° and 36° . Those of Schonau have a lower temperature, viz., from 30° to 32° .

The water has no marked taste; its composition somewhat resembles that of Schlangenbad in Nassau, though it has not the oily feel of the latter. The analysis of Amburger, which I gave in my other work, states that there are twelve grains of saline substance to the pint; this is shown by the more recent analysis of Ficinus to be incorrect, as there are not more than $4\frac{1}{2}$ grains (chiefly carbonate of soda) in this quantity of water which would approximate it to that of St.

Nectaire in France. Dr. Schmelkes considers that of the German baths it has the greatest analogy with Gastein, which, looking to the temperature alone, may be the case. He thinks that Gastein would be more suitable in those cases where the depressed power requires a more dynamic or vital excitation, or revivifying influence, but when the derangement of the nervous system can be traced to a material origin, as visceral obstructions, etc., Teplitz would be preferable.*

The mode of action of the baths depends principally upon their higher or lower temperature; the hotter springs excite powerfully the skin, vascular and nervous systems, while the cooler ones of Schonau have a more sedative operation, allaying irritability, and promoting the secretions of the skin and kidneys. Some of the springs have obtained a special reputation (probably without much reason) for the relief of particular complaints; thus, the Schlangenbad is deemed more efficacious in nervous disorders, the Schwefel or Neubad in cutaneous eruptions, etc. Mud-baths have been likewise employed at Teplitz of late years.

Gout is one of the diseases in which the reputation of the Teplitz springs stand high; but the cases require discrimination. Dr. Schmelkes says, "The waters will do harm in the regular gout, where the powers of nature suffice to induce the specific gouty inflammation; in those cases of

* "Die Thermal-Bæder zu Teplitz."

anomalous gout where regular paroxysms do not take place, from an excess or oppression of the vital powers, as in the acquired gout of robust individuals, and also in that atonic form of the disease connected with great debility." I should consider the cooler Teplitz springs likely to be most useful in the kind of gout termed nervous, with a degree of general irritability, the pain and swellings suddenly shifting from one part to another. Such a patient would not, in many instances, bear strongly impregnated baths like those of Wiesbaden, while others slightly mineralised, like those of Teplitz, Plombières, or Buxton, might be used with advantage. When there is much derangement of the digestive functions, the Teplitz baths would be likely to disagree till this disordered condition was rectified by Carlsbad, Pullna, Marienbad, or by other means suited to the circumstances. The above-mentioned cold waters, as also those of Bilin and Kissingen, which are imported to Teplitz, are not unfrequently recommended to patients while undergoing a course of the baths. In those cases of gout of long standing, where there are depositions in the joints, contractions and stiffness of the limbs, especially in persons of an irritable habit, Teplitz would also be likely to be of service in procuring at least some alleviation, if not a long exemption from the attacks. As at other thermal springs, an attack of gout is occasionally induced on commencing the use of the baths; it is, how-

ever, in general but slight, and is in most cases succeeded by an improved state of the health.

A great many paralytic patients annually resort to Teplitz, though, as Dr. Schmelkes observes, "Many leave their crutches behind, yet many are also disappointed." Like other thermal baths, advantage will often be derived from those of Teplitz in those cases of paralysis, which originate in suppressed perspiration, cold, repelled cutaneous eruptions, gout, or rheumatism. When the paralysis depends upon apoplexy or other lesion of the brain, they will generally produce little or no effect. Some of the poor patients afflicted with paralysis remain for a long time in the public bath, which has a very high temperature, and this practice is not unfrequently attended with unexpected beneficial results. The same circumstance has been observed at Mont D'Or, which, as we have seen, is also a slightly mineralised water of a high temperature, and where the baths are taken hotter than elsewhere.

Rheumatic cases form also a large proportion of those which derive advantage at Teplitz, and there is no doubt that many would be cured, and that almost all would be benefited, at least for a time, but that, as at other slightly mineralised springs, many would relapse. Dr. Reuss considers the Teplitz baths as best suited to the kind of rheumatism occurring in cachectic habits, combined with more or less irritability, and a high degree of sensibility. The doctor, who, like many

other of his confrères at German watering-places, strongly advocates the peculiar vitality of thermal springs, states, with Bischoff and other local physicians, with regard to the Town and Schonau baths, that even when the former are reduced to the same temperature as the latter, their action is, nevertheless, more exciting, and consequently, that in all deep-seated and inveterate complaints which require an energetic treatment by mineral baths (*heroischen Badekur*), the town baths should be employed, but in those cases where a less *heroic* and stimulating medication is required, the Schonau baths are preferable.* Of this latter kind are several nervous complaints, occurring in females, attended by spasmodic and hysterical symptoms.

A state of general irritability, painful and disordered menstruation, and universal debility, scrofulous cases where there is no material local disease, occurring in delicate children, would also be benefited by these baths, with which the drinking of the Bilin water might be advantageously combined. Elderly people, and those approaching to, or who are past the grand climacteric, who experience a general breaking up of the health, with a disordered state of the digestion, and of the skin, would frequently feel the renovating influence of a course of bathing in the cooler springs. Dr. Reuss states that the Teplitz baths are highly serviceable in rectifying fœtor of the perspiration, especially of the feet or hands, and also in cases

* "Die Bäder von Teplitz," 1835."

of ulcers from a bad habit of body, stiffness of the joints, or susceptibility of the cicatrices of wounds to atmospherie changes. Hufeland likewise adds his testimony to their advantage in these latter cases, of which there must have been numerous examples among the patients in the military hospitals.

Drinking the Teplitz water may be recommended in cases of stomach disorder with acidity, and want of tone, where an aperient action is not required, which is often the case in those whose nervous powers are impaired, as elderly people and delicate females: it usually acts upon the kidneys, and combined with the baths might be useful, both from its diuretic and alkaline qualities in cases of gravel, and some other complaints, to which, however, other mineral waters would be equally if not more applicable.

The latest analysis by Dr. Wolff, of Prague, exhibits about the same quantity as that of Fieinus, viz., 48 grains in 10 lbs. of water, with 8,924 cubic inches of gases, of which $\frac{5}{8}$ are azote and the rest carbonic acid.

GASTEIN.

CALLED also Wildbad-Gastein, is situated a few hours' drive from Salsburg, in a romantically secluded position, among the snow-tipped pine-covered Alps, and on the edge of the mountain-torrent Ache, which forms at this point a fine waterfall. It is one of the highest baths in Europe, being 3,000 feet above the level of the Mediterranean : the climate is consequently raw and unsettled. Even on the longest days the sun's influence is but little felt (except in the middle of the day, at which time the heat is often oppressive), as it rises late above, and sets early behind the adjacent mountains, which are not unfrequently enveloped in clouds. From these causes, and from the spray of the waterfall, the mornings and evenings are generally cold, and often damp ; yet the high reputation which the springs have acquired, renders the place thronged during the season, and many persons are obliged to leave for want of accommodation, which, however, may often be obtained better at Hof-Gastein, a village about three quarters of a mile lower down the mountain,

in a more open and agreeable position, sheltered from the north and east winds, enjoying a milder and drier atmosphere, and less liable to sudden transitions than Wildbad; whence the water of the principal spring is conveyed through pipes of pine and larch wood, by which it loses somewhat of its heat; though this cannot render its action different from what it is at the source; as being too hot for bathing, it is allowed to remain all night in the baths at Gastein to cool down to the proper temperature.

There are several establishments of public and private baths. At the Schloss, belonging to the Archduke, where visitors can be lodged, there is a bath in which about a dozen persons can bathe at the same time. The baths of Straubinger's old and new hotels are divided into the Fursten and Capueiner, where baths are taken in common, part of the latter being appropriated to ladies. Besides a large hotel, about fifteen lodging-houses. Some patients remain a long time in the waters, and some even bathe twice in the day, though these cases are comparatively rare. "The common bath," says Dr. Streintz, "in which ladies and gentlemen assemble together, contains 365 cubic feet of water, and requires nearly four hours to fill it. It will accommodate fifteen or sixteen persons, who can walk about in the water, or rest upon the seats which are fixed there for the purpose. At each side of the bath is a large dressing-room, one for the men, the other for the women. Around

the bath runs a gallery, where the friends of the bathers can assemble and enter into conversation with them." *

There are numerous springs rising on the bank, and in the river. Those most employed are the Furstenquelle (temperature 37° R.), the Doctorsquelle (38°), the Hauptquelle (38°), and the Straubingerquelle (36°). A spring, rising in the Aehe, supplies the horse bath. The quantity of solid substance and gas in the water is very small; scarcely two grains of the former, and a cubic inch of the latter to the pint. Gastein is in this respect very similar to other thermal springs in mountainous regions, as Leuk, Pfeffers, &c., which have, nevertheless, a high reputation for their curative efficacy in certain diseases, and which are generally cited as a proof that the activity of a mineral spring in the form of bath, frequently does not depend upon the quantity of its constituent principles; and also as a proof of the vitality of thermal springs, the difference of their caloric from artificial heat, &c., on which subject Schwartze observes—"As the Gastein springs differ so little in their physical and chemical properties from pure spring water, and yet are so exceedingly powerful in their operation, so some have endeavoured to explain the circumstance, partly by their geographical position, the character of their environs, and partly by the supposition of magnetic, galvanic, electric, and other hidden powers. As

* "Les Bains de Gastein."

far as the latter supposition is concerned, it appears from the most recent and careful investigations, that it must be considered as an untenable hypothesis; while with regard to the first, it is so far valid, that these circumstances are calculated to exert the most powerful and penetrating influence both on body and mind—only when there exist a certain degree of susceptibility and power of reaction.”*

Half-faded flowers, by being immersed in the water, are restored to their pristine colour and brilliancy, which is not the case when the experiment is made with common water artificially heated. According to Baumgartner, this water is a much stronger conductor of electricity, and contains a larger quantity of hydrogen than common water (viz., in the proportion of three to two, which is more than in any other kind of water); at the temperature of 14° R., its specific gravity is less than that of distilled water; while at a lower temperature, as 11°, it is greater. If this be the case, we may find in the circumstance some solution of the problem of their action. I have elsewhere quoted the opinion of Vetter, with respect to the operation of these slightly mineralised waters.† The same author remarks in another work: “It will be evident to every one who has paid attention to the subject, that so elevated a position must act by arterialising the blood of those persons accustomed to live

* *Op. cit.*

† “Mineral Waters and their Curative Agency.”

in lower localities, and that under the influence of the increased activity of the lungs from the pure mountain air, the operation of the baths must be promoted. Internally taken, this water has no other effect than common water." According to Drs. Werneck and Eble, horses, dogs, parrots, and other birds, drink it without any effect being produced. Werneck says of persons bathing in the water, "Whether he be a townsman or a countryman, a mountaineer or a lowlander, who bathes for half an hour, two or three times at a temperature of 29°, he will experience no difference between the Gastein and common warm water.

"The particular operation of these baths becomes manifested during the course, and frequently long afterwards. In several patients, after seven or eight baths have been taken, a slight indisposition, determination of blood to the head, loss of appetite, &c., are observed, which, however, soon subside, and seldom continue more than twenty-four hours. In some patients redness of the face occurs, and small vesicles arise; in these cases it is remarked that the patients soon afterwards become better, and their strength increases. But in those cases where no feverish action takes place, a longer time elapses before any amelioration is evident."*

These, like other thermal baths, increase the activity of the skin, and the amount of perspiration, which, however, is not copious. Crises,

* "Ueber den Gebrauch und die Wirkungen natürlichen und künstlichen Heilwasser.—Eble, die Bäder zu Gastein." Wien, 1834.

chiefly evidenced by an increase of the quantity of urine, are not uncommon, a reddish sediment being often deposited towards the termination of the course, and gravel and calculi being not unfrequently expelled from the bladder. Their general operation on the system, is under different conditions mildly exciting, revivifying, strengthening, or sedative, and often tends to rectify a depressed state of the vital powers; hence many old people feel themselves younger after a course of baths: the pulse improves in fulness, the muscles in firmness, the limbs lose their stiffness. These waters are also said to have a special relation to the generative system, the powers of which they increase, but it is in all probability by improving the general health. Eruptions are not unfrequently produced by them on the skin, and even sometimes appear after the baths have been discontinued. They are likewise especially applicable in those cases of diminution of the nervous energies, from excesses, or from too close mental application; such as nervous disorders with loss of power and muscular relaxation, tremblings of the limbs and paralysis (especially when from incipient marasmus of the spinal chord, induced by dissipation, excess in drinking, or premature old age). “The more purely nervous the debility is, and the less it depends upon material or organic affections, so much the more certain, effectual, and wonderful, is the power of these baths.”* In

* Eble, op. cit.

debility of the generative organs and in sterility from the above mentioned causes, in tedious and fixed rheumatic or gouty diseases, *tic doloureux*, general irritability of the nervous system, with spasmodic and hysterical symptoms, and in chronic cutaneous diseases, old wounds and ulcers, the Gastein baths may frequently be employed with advantage.

We have here the enumeration of several complaints to which almost all mineral springs are said to be applicable; but, though some might derive equal advantage from different springs, yet the particular circumstances in individual cases, may often guide us as to the preference to be accorded to one or the other. Thus, take paralysis for instance; though this disease may often be remedied by Wiesbaden, Wildbad, or Gastein, yet there frequently occur circumstances, which would lead us to expect more benefit from one of these springs than another. Considering the situation of these baths, particularly of Wiesbaden and Gastein, no two places can be more opposed, both in regard to their climate and the nature of their waters, the only point which they have in common being their elevated temperature. No medical man, therefore, who is acquainted with these circumstances, would, because he had heard that Wiesbaden and Gastein were beneficial in paralytic cases, deem it a matter of indifference to which of these places his patient was sent. He would not send a young or middle-

aged irritable subject, in whom the disease was caused by a course of dissipation, or by an accident, and of recent duration, to the stimulating baths and relaxing climate of Wiesbaden—from which, in all probability, he would not derive benefit; whereas by the milder excitation of Gastein, and the more invigorating nature of its atmosphere, the disease would very likely be removed in a few weeks. Or, on the other hand, if the disease existed in an individual of a different habit or constitution, or originated from different causes, such as a chronic affection of the spinal chord or its membranes, visceral obstruction, from rheumatism, or from exposure to damp and cold (as is often the case in military men who have seen hard service), and if it were of long duration, the more exciting and penetrating operation of the Wiesbaden baths, in which both the temperature and the absorption of a large portion of a water strongly impregnated with saline and gaseous substances are active agents, combined with the warmth of the locality, by which the effect of the water is promoted, would be a more likely means of affording effectual relief than Gastein, Wildbad, or any similar springs, which in many of these cases would not be sufficiently active to resolve exciting obstructions, or to arouse the nervous energy of the system or of the affected parts, from its torpid condition. There are unquestionably many cases to which both kinds of springs might be applicable with advantage, but

it does not follow from this, that the advantage would not be the greater from one than from the other; and though in these doubtful cases a slight mineralised thermal spring might render great service, yet in the majority of instances the benefit from a spring like Wiesbaden would be more real, of a more permanent nature, and more likely to effect a complete removal of the disease. In certain cases, again, though one kind of bath might appear to be more particularly indicated, yet its use might not be attended with the anticipated advantage which might subsequently be derived from the other. This may depend upon the individual idiosyncrasies, or upon the obscurity in which the causes of this disease are often enveloped, &c.

The same remarks will apply to rheumatic, neuralgic, and other complaints. In the greater number of instances of rheumatism and neuralgia which admit of relief from mineral waters, if accurate statistical data could be obtained, and the results of the treatment known after a definite length of time, I have little doubt that the permanent cures would be in a much greater proportion from a strongly mineralised saline or sulphurous spring, than from Gastein, Leuk, Pfeffers, or any other naturally warm spring, containing but a minute proportion of solid and gaseous substance; but, at the same time, that these latter kind of springs would be more suited than the former to certain cases, to the peculiarities of

which I have alluded, under the heads of Wildbad, Wiesbaden, the Springs of the Pyrenees, &c.

In some persons of irritable habit, the duration of the bath, at first, should not be longer than a quarter of an hour, the time being subsequently prolonged till a crisis by perspiration, or by increased flow of urine, takes place, which frequently happens about the fifteenth or eighteenth bath. Gastein, like some other baths in elevated situations, as Barèges, has a reputation for causing the expulsion of balls, splinters of bone, or other foreign substances lodged in the body. Hæmorrhage also occasionally takes place, especially in cases of suppressed menstrual, or hæmorrhoidal discharge; which circumstance may be ascribed to the combined influence of the rarity of the atmosphere, and the baths, on the vascular and absorbent systems.

An establishment for the drinking of goats' whey (Molkenkur) has been formed within the last few years, and the practice is in some cases superadded to the use of the baths with advantage.

II. COLD SPRINGS.

MARIENBAD.

THIS now much frequented bath lies about four hours' drive from Franzensbad, five from Carlsbad, and two miles from the high road from Eger to Pilsen, and is surpassed by few places in the picturesqueness of its situation. On entering from the Eger side, the valley expands into a more open space, bounded by pine-covered hills, and laid out as a garden. On the left are about a dozen large and handsome lodging-houses, the mansion belonging to Prince Metternich being in the centre. In front, and at right angles with this range of buildings, is another row of larger houses, the Tepl-House belonging to the Abbey of Tepl, but which is let to strangers in the season, being at one extremity; and Klinger's Hotel and lodging-house (which contains clean and handsomely furnished apartments for families and single per-

sons, and a public dining-room, where one hundred sit down to dinner daily in the season) at the other. Near to Klinger's Hotel are a colonnade and promenade room, leading to the principal spring, the Kreutzbrunnen, which rises beneath a eupola, surmounted by a large gilt cross, whence houses are continued up the hill. The buildings terminate at the old bath-house, and form altogether almost a square, enclosing the public promenade, in which rise two other springs, the Ambrosius and Carolinenbrunnen, and where, in the season, booths are opened for the sale of fancy articles. The surrounding hills are agreeably disposed in walks; the one leading to the miniature Switzerland (Kleine Schweiz), commands the best view of Marienbad and the valley beyond. Invalids, however, who cannot walk, are obliged to confine themselves to the lower parts, as there are no horses or donkeys for riding, and only one carriage-road leading through the valley; and, as there are no public amusements, persons in health who do not seek retirement, would find but little inducement to make a protracted *séjour* at Marienbad.

The old bath-house, which has been recently renovated, contains about sixty bathing cabinets conveniently fitted up, and two douche cabinets. Behind this edifice is another, beneath which the Marienbrunnen rises into a large reservoir; gas bubbles are constantly escaping, and a large quantity of carbonic acid is thus always collected to

the height of two or three feet above the surface of the water. This spring supplies the baths, the water being heated artificially to the proper temperature for bathing. A small building adjoining has been erected for the gas-baths. At a little distance from the old, and lower down the hill, is the new bath-house, containing ten bathing cabinets, supplied by the Ambrosius and Caroline springs.

The springs of Marienbad belong to the Abbey of Tepl, and though they have been used for more than two centuries by the people of the neighbourhood, have only recently been brought into general notice, chiefly by Nehr, physician to the Abbey, who, in 1813, published a description of the place. Previous to this period it was a wild sombre valley, surrounded by dark pine forests, with no other building than a dilapidated cottage, and a wooden gallery around the Kreutzbrunnen, which was in the centre of a marsh, into which stepping stones were placed to enable the drinkers to reach the spring. In 1810 the bath-house was erected, the baths and mud-baths being then principally in request, and Marienbad has ever since been annually increasing in reputation and in the number of its visitors; though even at the time when the second edition of Nehr's work appeared, in 1817, the accommodation was so bad that parties were recommended to bring their beds with them.* Subsequent to

* Heidler. "Marienbad et ses Différens Moyens Curatifs dans les Maladies Chroniques."

this period, the works of Scheu, Heidler, and others, as well as the writings of non-resident practitioners of celebrity, Clarus, Kreysig, Rust, &c., have tended still farther to make known the virtues of the waters; Dr. Herzig, one of the resident practitioners who speaks English, has likewise published an interesting *brochure* on the Kreutzbrunnen.

The neighbourhood abounds in mineral springs; at Kœnigswarth there are several chalybeate ones. Those of Marienbad rise near to each other, with the exception of the Ferdinandsbrunnen, and the recently enclosed Waldquelle. They may be divided into three classes; viz., the saline aperient springs, the Kreutzbrunnen, and the Ferdinandsbrunnen; the chalybeate ones, the Carolinen and Ambrosius; and the acidulous, the Marienbrunnen and the Waldquelle.

The supply of water from the different springs is abundant. The taste of the Kreutzbrunnen is saline, piquant, with an *après-gout* of iron, and is not disagreeable. As a proof of the estimation in which this water is held, it may be mentioned, that little less than half a million of *cruches* are exported annually, which is more than from any other spring in Germany, except Selters.

When drunk, the water is easy of digestion, and does not generally disagree, unless there be some offending matter in the intestinal canal, when its use should be preceded by a purgative. Great attention is required during the course not

to take improper articles of diet, which, however, is pretty well guarded against by the simplicity of the dinners. It generally increases the appetite, and produces some action on the bowels, though this is not always the case, and the water is not on that account the less efficacious, provided the state of constipation do not continue. After taking the water for a certain time, patients not unfrequently pass large quantities of dark green matter from the alimentary canal, which may be considered as a critical evacuation, and does not induce debility.

The use of the Kreutzbrunnen is most applicable in those cases where there is a deranged state of the mucous membrane of the alimentary canal, with collection of mucosities, in cases of obesity, abdominal engorgement, and congestion of various organs from repletion and fulness of the veins; in the nervous affections of both sexes, when connected with a full habit, and in persons accustomed to free living who lead a sedentary life. In such persons, some degree of acceleration of pulse, feverishness, and determination of blood towards the head, are sometimes occasioned; which effects may often be prevented by allowing the water to be exposed for some time to the air before drinking, or by warming it, which allows the escape of the gas; though by these means the tonic properties are impaired, and the operation is rendered more laxative.

This water is also well adapted to procure the

evacuation of gall-stones, and to prevent their formation, as well as that of gravel or stone in the bladder, which so frequently depends upon the above-mentioned causes ; here also the diuretic property of the water has a beneficial effect in causing the expulsion of these concretions when formed ; though, when a diuretic effect is more especially sought for, the Ferdinandsbrunnen is to be preferred.

The opinion of Vetter coincides with that of Heidler in most respects. He considers that it is only by the excretion of effete matters by the bowels that the water is beneficial, though he also deprecates its being taken so as to produce active purgation at the time ; and observes, “ The principal complaints in which this water is beneficial are dyspeptic affections, with the character of irritation and disordered innervation of the alimentary canal, from too much eating, from the quantity of the food being too exciting or too heavy ; and also from too freely drinking of fluids, which are not water, combined with deficient muscular exercise ; and especially when the patient has been in the habit of having recourse to drastics, which produce only temporary relief, and impair the nervous energy of the stomach ; and which, by their exciting property, tend to induce a high degree of torpor, and fulness of the nervous system.”*

In some gouty cases, in persons of full habit

* Op. cit.

and addicted to the pleasures of the table, the Marienbad waters will be found very efficient; indeed, it was from their effects in this disease that these springs formerly acquired so high a reputation. To certain forms of gout they would not, however, be so applicable as others, to which I have alluded under the head of Carlsbad. From the analogy which the action of the Kreutzbrunnen bears to the Carlsbad waters, it may be used in the same kind of eases; the Carlsbad waters, however, from their high temperature, are more penetrating, solvent, and exciting, and on this account do not suit some persons. The Kreutzbrunnen has been termed the cold Carlsbad, and Hufeland, after stating that it is entirely to the efficacy of its springs that Marienbad owes its reputation, says, "I have again convinced myself that the Marienbad water is the Carlsbad cooled, and that it is indicated in similar eases as Carlsbad, but it is to be preferred when the latter would be too exciting;" its action is, however, more tonic than of Carlsbad.

The Kreutzbrunnen has also been compared to the Ragozzi of Kissingen, the Salzquelle, and the cold Sprudel of Franzensbad, and there is no doubt that their action is in some respects analogous, and that in certain eases, the one or the other of these springs might be used with equal probability of success. Some material differences will, however, be found in their composition; thus, the Ragozzi is more gaseous, and contains

principally the muriate of soda, while the predominating salt of the Kreutzbrunnen is the sulphate. The quantity of iron is also greater in the Ragozzi, which, on the other hand, scarcely contains any carbonate of soda, of which there is a not insignificant portion in the Kreutzbrunnen. The Ragozzi is, therefore, on the whole, more tonic, acts less on the bowels, and would be better adapted than the Kreutzbrunnen to some cases and constitutions, and *vice versâ*.

The Salzquelle of Franzbad has less sulphate of soda than the Kreutzbrunnen, and approaches nearer, in the amount and nature of its saline and gaseous contents, to the Ferdinandsbrunnen.

This last-named spring lies about a mile distant from the others, a handsome promenade-room and portico having been constructed on the spot for the accommodation of drinkers. It has more gas but less salts than the Kreutzbrunnen; it is, consequently, in general, less aperient and solvent, and acts more on the kidneys. It suits some persons with whom the Kreutzbrunnen disagrees, though in general it excites the circulation more, and disposes more to congestion. On this account, and also on account of the iron being in larger proportion compared with the aperient salts, it would be less suited to persons of a full or inflammatory habit; and would be better adapted to those of phlegmatic temperament, and to nervous patients, where a tonic rather than an aperient action is required. A short course of

this water, or of one of the chalybeate springs, is not unfrequently recommended after the use of the Kreutzbrunnen.

The Carolinen and Ambrosiusbrunnen belong to the class of chalybeate waters; the former is principally employed for drinking; the latter is not much used except to supply the new bath-house. The temperature of both, like that of the other springs, is about 8° R. The Carolinen contains very little saline substance compared with the Kreutzbrunnen; the action of the iron, which is in larger quantity, is consequently more predominant. These springs may be used in most cases I have enumerated when treating of the chalybeate ones in another work on mineral waters.

The Marienbrunnen scarcely contains a grain of solid substance, but it has nine cubic inches of carbonic acid to the pint; it is used exclusively for the water and gas-baths.

The Waldquelle contains (according to Steinmann) about six grains of sulphate, and as much muriate of soda to the pint, with minute portions of carbonate of lime and magnesia, and eighteen cubic inches of gas.

Baths are combined with the internal use of one of the springs in a large proportion of cases, especially rheumatic, gouty, and scrofulous affections. The mud-baths are also a good deal used. In its composition, the mineralised mud of Marienbad is not dissimilar to that of Franzensbad,

being the product of earthy and vegetable matter decomposed by the passage of mineral water through it. It contains a good deal of sulphur; Heidler says, that lumps of sulphur of several pounds' weight are sometimes discovered in the mud, and that carbonic acid and sulphuretted hydrogen gases are evolved in large quantities. It contains, likewise, the muriate and sulphate of soda, lime, and magnesia, silex, carbonate of iron, and a bituminous substance. Its colour is a dark brown; it is friable when dry, and has an oily feel when moistened. A sufficient quantity of the Marienbrunnen water is added to a certain portion of mud to reduce it to the proper consistence of a bath, on leaving which the patient steps into a water-bath in the same cabinet, for the purpose of clearing the mud from the skin.

As mud is a bad conductor of caloric, these baths may be used at a higher temperature than water-baths. The fluid in contact with the skin is soon reduced to the temperature of the body, and is therefore lower than the rest, which causes a sensation of coolness, even when the temperature of the bath is high; patients are consequently advised to move their limbs freely, in order to agitate the liquid.

The effects of these baths vary according to the degree of their temperature; when only a few degrees below blood-heat, they are emollient, sedative, and discutient, diminishing the frequency of the pulse fourteen or fifteen beats;

when hotter, they are very exciting, causing redness of the surface and eruptions ; their revulsive effects are consequently more powerful, and they are more especially indicated in the more torpid or atonic constitutions, in cases of long standing gouty and rheumatic affection, provided they be not accompanied with great debility. Several chronic cutaneous complaints, as impetigo, and herpes, and the relaxed state of the skin, giving rise to frequent perspirations upon slight occasions ; some cases of induration and engorgement of the liver and other viscera ; serofula, when the patient is not of a very irritable habit, and paralysis, will be often more effectually treated by the mud than by water-baths. The mud is likewise frequently employed as a local application against stiffness and contractions of the joints, tumours, ulcers, and pains of various parts.

The gas-baths were first brought into notice by Struve, the well-known inventor of the artificial mineral waters, who cured himself, after the failure of other means, of a painful affection with swelling of the thigh, by keeping it in the gas of the Marienbrunnen.

Franzensbad, Soden, and other springs rich in carbonic acid, have also their gas-baths, which are taken in a covered *baignoire*, into which the gas is introduced by means of tubes and stop-cocks ; in other instances it rises through the bottom. An aperture is left for the head to prevent the gas being inspired. In a few seconds a genial sen-

sation of heat is experienced over the whole body, especially the parts affected with any local disease, and the reproductive organs, which is accompanied with a tingling or pricking, and is followed by perspiration, either at the time or after the bath. The menstrual discharge is induced by the use of these baths before the usual period, as also the bleeding from piles in those labouring under this disease. They may be advantageously employed in cases of general torpor of the nervous system, suppressed or scanty menstruation, checked piles, scrofulous tumours and ulcers, in which there is a deficiency of action; debility of the sexual organs, and some affections of the sight and hearing dependent upon torpor of their nerves. In these latter cases, the gas-douche is principally employed.

In sixteen ounces of water according to Berzelius.

	Grains.
Sulphate of soda . . .	35·733
Muriate . . .	12·716
Carbonate . . .	9·616
Carbonate of lime . . .	3·686
Carbonate of magnesia . . .	2·548
Carbonate of iron . . .	0·165
Carbonate of strontian . . .	0·087
Manganese . . .	0·935
Lithion . . .	0·107
Earthy phosphat e . . .	0·025
Silex . . .	0·363
	<hr/>
	64·975
Carbonic acid gas, cubic inches . . .	8·384

A new analysis of the Kreutzbrunnen made in 1843, by Kersten, does not materially differ from the foregoing; he states, however, that the Ferdinandsbrunnen contains 73 grains to the pint, of which 38 are sulphate of soda—15 muriate of soda.

FRANZBAD, OR FRANZENSBAD,

LIES about a league from Eger. Its water has been for many years exported, and was known by the name of Eger Water. Though the surrounding country is somewhat deficient in scenic beauty and in objects of interest, the place itself has, in the season, rather an animated and cheerful appearance. On entering from Eger, the first object that presents itself is a small temple beneath which rises the Franzquelle, or principal spring. A promenade ground with colonnade, rows of booths, and the public salon, are on the left of the road, and on the right the Kaiserstrasse, a range of handsome houses and hotels, in front of which are avenues of chestnut trees. There are two or three other streets, in which most of the houses have been built within the last few years. The bath-house is a large building containing thirty-five cabinets, besides which, at the time of my visit, a small building was in progress of erection for the mud-baths. There is likewise a

small hospital for poor persons requiring the waters.

Though only of recent date as a place of resort for the higher classes, Franzbad has not been so much frequented within the last few years, which must be mainly owing to the vicinity of Carlsbad and Marienbad, as its mineral springs are inferior to none of the same kind, and would be preferable in certain cases to either of the above-named.

The accommodations, however, are not so good, and it presents but little to amuse or occupy the attention of visitors, unless they required a course of its waters.

The springs differ in their composition and effects. The Franzquelle is a saline chalybeate water, very gaseous and sparkling, with a piquant taste, leaving an astringent impression upon the tongue; its temperature is about 8° R. The Louisenquelle has an analogous composition, but is less gaseous, and is principally used for baths. It rises in an extensive reservoir close to the bath-house.

About a quarter of a mile distant from the Franzquelle, is the Salzquelle, to which a covered gallery leads and serves as a promenade in wet weather. This water has a more saline taste, and may be regarded as a saline aperient. It is likewise a good deal exported.

The cold Sprudel rises close to the Louisenquelle; in composition it resembles the Salzquelle, but it is more gaseous, and consequently better

adapted to individuals of a torpid habit, to whom the exciting action of the gas would be likely to be beneficial.

A new spring, the Wiesenquelle, has lately been enclosed; it rises near the Salzquelle, and contains more salt (forty-six grains to the pint, of which twenty-five are sulphate of soda). Dr. Clarus, of Leipsic, and Dr. Conrath, speak highly of this spring, as a mild aperient, highly useful in derangement of the abdominal circulation, and in plethora with torpidity of the absorbent and nervous systems. Osann places it in the class of Glauber-salt waters, and says its operation is intermediate between the springs of Carlsbad on the one hand, and the Franzquelle on the other, being less aperient than the former, and more so than the latter.*

I have already pointed out some of the differences between the Franzquelle and the Kreutzbrunnen. The former, containing much more iron and gas, is a more decided chalybeate water, with sufficient aperient salt to prevent the binding effects of the iron, which in the more pure chalybeates, as Schwalbach, Bocklet, or Spa, sometimes prevents their exhibition, though their action is more directly strengthening. The Salzquelle is very analogous to the Ferdinandsbrunnen, both with regard to the amount of salts and gas, and also to their relative proportions. The Ferdi-

* "Die Wiesenquelle zu Eger-Franzbad." 1840.

nandsbrunnen contains somewhat more iron, but the difference is so slight, that one or the other spring might be indifferently recommended in the same cases. Thus, both at Marienbad and at Franzbad, there is a choice of springs of different kinds, which may be applicable to various conditions. The Franzquelle is more especially adapted to rectify those states of debility, with slight abdominal engorgement, which so frequently occur in literary persons, and others whose health is deranged by a sedentary mode of living; the baths may also be used conjointly with the drinking in these cases, and in others to which I have already referred under the preceding head. Those cases of weakness from diminution of the fibrine of the blood, induced by hæmorrhages, discharges, &c., or from moral impressions, would also be greatly benefited by a course of the Franzquelle, as would those chlorotic patients who are unable to bear the action of a more direct tonic. Kreysig enumerates among the cases to which this water is applicable, the arthritic affections of weakly people, the disposition to hæmorrhoids, to hæmorrhages, or to abortion, and nervous disorders when not attended with a high degree of irritability, in which case Ems would be preferable.

Gas-baths and douches are a good deal used at Franzbad, in a small building with three rooms furnished with every requisite apparatus; but the mud-baths are the occasion of a large proportion of invalids resorting to this bath. The mineralised

mud is extremely abundant in the immediate environs of the place, especially about the Wiesenquelle, being covered with a soft turf and a stratum of sand, thinly covered with grass and moss, and is in some places ten or twelve feet deep. On removing the turf to the depth of about a foot, a strong smell of sulphuretted hydrogen is perceived; although this mud, like that of Marienbad, is of the class called carbonised, from the large quantity of salts in a concentrated state with carbonic acid and iron, which is perceptible to the taste. I have already mentioned under the preceding head the principal cases to which these agents are most applicable.

The resident practitioners speak highly of their effects in persons of torpid constitution; or, when there is not a high degree of nervous susceptibility, in scrofulous and rheumatic cases, neuralgia, sciatica, and paralysis, which have resisted other means of treatment.*

The packing and exportation of the water takes place in a large building close to the Franzquelle. The corking is effected with a machine, by means of which the contact of the air is effectually prevented. In the same establishment there is a manufactory of champagne by certain additions to a common kind of wine, and impregnating the mixture with carbonic acid.

* See "Essai sur les Bains de boue de Franzbad." Par le Dr. Boschau. Leipsic, 1852.

Sixteen ounces of water of the Franzquelle contain, according to Tromsdorf.

	Grains.
Muriate of soda	9·2160
Sulphate	17·9333
Sub. carbonate	9·3200
Carbonate of lime	0·1320
Carbonate of magnesia	1·6066
Carbonate of strontian	0·0026
Carbonate of iron	0·0160
Manganese	0·0040
Phosphate of magnesia	0·0040
Silex	0·3333

38·5678

Carbonic acid gas 14 cubic inches.

Or, according to a later analysis . 40 „ „

The analysis of Berzelius differs somewhat from the above. According to this chemist, the Salzquelle contains in a pint 38 grains of saline substance, of which are, 21 sulphate of soda, $8\frac{3}{4}$ th muriate of soda, $3\frac{1}{4}$ th carbonate of soda, about $\frac{1}{8}$ th of a grain carbonate of iron, and 26 cubic inches of carbonic acid.

BILIN.

THE springs of Bilin rise a short distance from the town, and about an hour's drive from Teplitz. They are not resorted to for the purpose of using the water on the spot; the only building there being for the purpose of packing and exporting it. A large quantity is drunk in Teplitz, and the other Bohemian baths, as well as in other parts of the Austrian territories. The principal spring is the Josephsquelle, the water of which is so clear that the smallest object can be seen at the bottom of the well, which is some feet in depth. Although it contains a large portion of carbonic acid, this gas is in so intimate a state of combination, that the water sparkles very little, emits but few bubbles, and may remain for some time exposed to the action of the air without losing its properties. The taste is piquant, but is not very alkaline, as the carbonic acid is in excess. It forms a pleasant and refreshing summer beverage, and, like the Seltzer water in the Rhenish countries, is in very general use mixed with sugar or wine. The

Carolinenbrunnenn is close to the Josepqsquelle, but is not much used.

The Bilin water is very analogous in composition to that of Vichy, from which it differs in being cold, and in containing less bicarbonate of soda, though it possesses more of this salt than any other German mineral spring. Fachingen approaches nearest to it in this respect, but has less gas and a not inconsiderable quantity of iron. The temperature of the Josepqsquelle is 9°.

Steinmann's analysis differs from that of Reuss, quoted in my other work, which states the quantity of carbonate of soda to be seventy grains, by which, however, the crystallised salt is meant; whereas, in the former, the amount is stated of the salt in its dry state, which accounts for the great apparent disparity. Reuss does not mention the sulphate of potass as an ingredient. This salt is, in fact, rarely met with in mineral springs.

The operation of this water is cooling, moderately exciting the nervous system, removing acidity, improving the state of the secretions of the stomach and liver, and the quality of the blood; preventing and removing enlargement of the lymphatic glands. It may be employed medicinally, in relaxed states of the mucous membranes, as stomach derangement, with acidity; chronic bronchial affections, with increased secretion. In gouty habits, during the intervals of the disease, the copious use of this water, combined with attention to diet, would go far to pre-

vent the recurrence of the attacks, or to mitigate their severity. In gravel and stone, a water of this kind would be of great service, not only in preventing the re-formation, but also, by its lithotriptic properties. In some nervous complaints, when direct tonics could not be borne, a water of this kind, joined to a course of sedative baths at Teplitz or Schlangenbad, would be likely to render great benefit. It might be used with advantage in incipient consumption, either mixed or not with milk, and likewise in passive hæmorrhages.

Great advantage is often derived from a water of this kind in scrofulous complaints, and especially in swellings of the neck or mesenteric glands. Dr. Reuss says, that the inhabitants of Bilin, who use the water habitually, are not liable to scrofula or goître, though the former of these diseases is extremely prevalent in most parts of Germany. The doctor further says, that he has only had occasion to treat scrofula in two families at Bilin during a practice of forty years, and these families were not in the habit of using the water—neither are there any cases of stone or gravel in the neighbourhood. Dr. Reuss likewise speaks highly of the water in cases of disordered menstruation in persons of torpid habit and languid circulation;* in such a case tepid bathing at Teplitz would be of great service combined with the use of the Bilin water.

* “ Die Mineralquellen zu Bilin.”

PULLNA.

THE village lies a little distance from the road between Carlsbad and Teplitz, but is only resorted to by poor persons from the neighbourhood, for whose use a few baths have been fitted up. The wells are near the village; their number is about twenty; they are from six to nine feet deep, about six feet in diameter, and have been dug at various periods, the water flowing into them after pereolating through a soil abounding in the salts with which the waters are impregnated, so that they can scarcely be termed mineral springs. In summer and autumn, and when the weather is dry, as there is less water in the soil, that in the wells is more strongly saturated, and at these times it is bottled for exportation. After wet weather the water is weaker. It contains but a minute portion of gas, and, as might be supposed from the large quantity of soda, tastes intensely bitter and disagreeable. It has been stated in the "Spas of Germany," that the peasantry habitually make use of it instead of common water. This, as I was informed on the

spot, is an error, and even the persons engaged in the building for packing the water, procure from the village fresh water for drinking and for culinary purposes. When employed medicinally, it has but little effect on the inhabitants as a purgative, unless it be previously warmed, or a large quantity be taken.

A glass of the water would produce some action on the bowels in most people, two or three are generally taken in the morning by those who go through a course; its use could not, however, be long continued without weakening the alimentary canal and the constitution. Taken regularly for a short period it is a very useful means of overcoming habitual constipation; when the desired effect is not produced by a moderate quantity, it would be better to warm the water, and use some of it in an enema instead of increasing the dose. It generally acts without griping, or inconvenience, and may be employed with advantage in some inflammatory and febrile diseases, in which a cooling purgative is required, as also in chronic disorder of the digestive organs induced by too full living, and attended with a plethoric condition of the system, a tendency to local congestions, as of the brain, thoracic and abdominal viscera, and hæmorrhoidal vessels. In the tendency to gout and to the formation of calculous concretions, painful and difficult menstruation in persons of a full habit, and who frequently require aperient medicine, it may be ex-

hibited with advantage, and likewise to children with a full and tumid abdomen; mixed with a little syrup or warm whey.

The Pullna water is not unfrequently employed preparatory to a course of the saline tonic springs, as Marienbad, Franzensbad, &c. The latest analysis by Ficinus, differs very materially from the older one of Struve, presenting some remarkable discrepancies. I have subjoined these analyses, together with that of Saidu Schutz. Dr. Wetzlar has published a special work on this water.*

* "Ueber den Nutzen und Gebrauch des Pullnauer Bitterwassers." Fifth Edition. Augsburgh.

SEDLITZ AND SAIDSCHUTZ.

THESE waters lie near to each other, and only a short distance from Pullna. The manner of their formation is similar, and their composition and action are very analogous to the Pullna water, except that the latter contains a much larger proportion of aperient salt, and its action could not be so long continued as either of the others without inducing debility. The Sedlitz water is not much exported; that of Saidschutz is taken in casks to Bilin, where it is bottled for exportation, a large quantity being annually sent to Paris. It is also used for the manufactory of magnesia and sulphate of soda, by the decompositions and affinities which ensue from the admixture of a concentrated solution with the Bilin water.

According to Dr. Reuss, the Saidschutz water in small doses improves the digestion and appetite, and excites the absorbents of the alimentary canal, the iron and soda preventing its action from causing debility. In larger doses it proves purgative, and increases the flow of bile, without too much irritation of the mucous membrane;

hence it is highly useful in torpid states of the abdominal circulation and absorption, as a revulsive means, and in diminishing an abnormal plasticity of the blood.*

By its excessive or too prolonged use, the stomach becomes debilitated, loss of appetite ensues, and diarrhœa, sometimes with an inflammatory condition of the bowels, supervenes. It is applicable to the same kind of cases as the Pullna water, and is often advantageously combined with a course of bathing at one of the thermal springs, especially in cutaneous eruptions, acné, &c., combined with disordered digestion in young and middle-aged persons.

* "Das Saiduwater, chemische untersucht von J. Berzelius, mit Bemerkungen ueber seine Heilkräfte, von Dr. Reuss." Prag.

ISCHL.

THIS bath is situated 1,500 feet above the sea, in one of the most beautiful valleys of the mountainous and romantic region termed Salz-Kammergut, fourteen German miles from Linz, and seven from Salzburg. From Linz to the beautiful lake of Traun is a railroad, the carriages being drawn by horses at the rate of nine miles an hour; and a small steamer has been put upon the lake within the last few years, so that visitors from the Danube are now enabled to reach Ischl with greater speed and facility.

The springs are of the cold saline (Soolquellen) class, and resemble those of Salzhausen and Kreutznach. A pint of water contains:—

	Grains.
Muriate of soda . . .	222·30
Muriate of magnesia . . .	7·11
Sulphate magnesia . . .	4·85
Sulphate magnesia . . .	1·82
Muriate lime . . .	0·78
	<hr style="width: 10%; margin: 5px auto;"/> 236·86

Also a small portion of iodine.

Like others of the same kind, these springs, in

the form of bath, have a powerfully penetrating, exciting, and solvent action upon the skin and glandular apparatus, determining from internal organs to the surface, and relieving congestion of the large vessels and viscera by causing a freer action of the capillaries. They are principally employed in scrofulous affections in persons of a lymphatic temperament, swellings, and indurations of the glandular system, chronic diseases of the skin where a strong stimulus is required, old syphilitic cases, and those in which mercury has been too freely used; as also in debility of the osseous system, as rickety affections, &c.

The so-called saline sulphur spring is mostly used for drinking; it contains only 44 grains of muriate of soda, and 12 of sulphate of soda to the pint, and is more aperient than the others, but the impregnation of sulphuretted hydrogen is very slight, and is probably dependent upon the water passing through vegetable and animal matter in a state of decomposition.

The Maria-Louisenquelle has a less amount of salts, and is mostly used for drinking. A whey and goat's-milk cure is likewise established.

The vapour of the boiling water from the reservoir is used as a bath in cases where vapour baths are indicated; it is likewise inhaled in some pulmonary complaints, as the catarrhal affections of old people, &c. The salt mine is one of the objects in the neighbourhood most frequently visited.

KREUTH.

THIS small bath is a good deal frequented in the season by Bavarians, especially from Munich. It stands on an elevated plateau, among the Bavarian Alps, surrounded by lofty and pine-covered mountains, and consists, for the most part, of two large lodging-houses, joined together by a covered gallery, a bath-house, three or four detached buildings, and stabling. It has also its Cursaal, where about 200 persons (being the whole population) set down to the table-d'hôte in the season. The walks in the environs and among the hills are varied and attractive, and the Lake of Tegernsee, with its beautiful scenery, is within an easy drive.

The springs possess but little saline or gaseous substance. In the so-called sulphur springs there are $5\frac{3}{11}$ grains to a pint, principally carbonate and sulphate of lime. A good deal of water for the baths is brought from the salt spring at Rosenheim, some little distance from Kreuth, which, however, is less frequented on account of its waters than for the beauty of its environs, the

elevation of its position, and the bracing mountain air—as also for the whey cure, which is here established, as at several other localities in Alpine districts. Most persons begin with two or three glasses of the whey, gradually increase the quantity to six or eight glasses, and bathe in the Rosenheim water; some also use whey baths. This treatment is more particularly indicated in cases of irritability of the nervous and vascular system, where a cooling and laxative regimen is required; as hæmorrhoidal affections, tendency to congestions of the thoracic viscera, and menorrhagia. In bronchial affections and incipient consumption, it is said to have a peculiarly soothing influence; the greater number of the invalids at Kreuth being those who labour under diseases of the respiratory organs; these persons should be careful to guard against the atmospherical transitions, to which so elevated a region is exposed. Dr. Kramer states that Kreuth is prejudicial in cases of pulmonary disease in persons of florid habit and active circulation, but that it is most advantageous in disease of the lungs of a scrofulous origin. The lightness of the air, and the solvent property of the whey, are of great service in hemoptisis, and in irritability of the nervous system.

KISSINGEN.

FEW baths have come into such general repute within so short a period as Kissingen, as may be seen from the yearly increasing number of visitors, among whom there have been many English of late years ; and there are perhaps none about which so much has lately been written. Besides the works of Drs. Maas, Balling, and Welsch, the resident practitioners, Dr. Wendt, of Breslau, Dr. Eisenmann, and two or three other physicians, have published works on the Kissingen waters of late years. Nor is their increasing reputation unmerited, as the nature and variety of the springs admit of their being adapted to the treatment of so many different diseased conditions. The position of the place is elevated and cheerful, in an open part of the valley of the Saal, surrounded by meadows and corn-fields, and sheltered from cold winds by high hills. The heat in summer is not oppressive, but rain more frequently falls than at many other baths. The town is clean, and contains about fourteen hundred inhabitants ; the two principal

streets being wide, the houses large and well-built. The Baierischer, Saehsiseher, and Wittelsbaeher Hofs, are somewhat primitive in their accommodations; the proprietors are obliged by law to keep a certain number of apartments vacant, in order that persons newly arrived should not experience difficulty in lodging themselves, till such time as they can engage apartments. Among the lodging-houses, those belonging to the physicians are the largest and best. In Dr. Maas's house there are several baths. Many of the visitors, however, lodge at the Kurhaus, a large establishment opposite the promenade, containing several bath cabinets, and a saloon where upwards of two hundred people sit down daily to the table-d'hôte. The dinners here, and in the hotels, are extremely plain; those sent to private houses are often very indifferent, so that the *bon-vivant* would have little inducement to remain at Kissingen unless for his health. In fact, as there are but few visitors for pleasure, the tables-d'hôte are under surveillance of the authorities, and nothing is allowed to be served up that is likely to disagree or to interfere with the beneficial action of the waters.

On the promenade opposite the Kurhaus are the three springs—the Ragozzi, Pandur, and Maxbrunnen, and on the bank of the river are the new and elegant Kursaal and Colonnade erected by the taste of king Louis, for occasional balls and reunions, and for exercise in wet

weather. There is, however, but little amusement of this kind at Kissingen, owing to the comparative absence of young people, the greater number of the visitors being middle-aged invalids. Gaming is in full activity within the Kursaal, being both here and at Bruckenaue tolerated by the government.

The Maxbrunnen is a saline acidulous spring very analogous to that of Selters, though it contains less salt, especially muriate of soda, and is much more gaseous (31 cubic inches to the pint). It differs from the Sinnberg and Wernarz springs at Bruckenaue, inasmuch as these are purely gaseous, and scarcely contain any saline substance. It is not unfrequently used as a cooling drink in summer, or mixed with wine at dinner, and may be used medicinally in similar cases as the Seltzer water, of which I have spoken elsewhere.*

The Ragozzi is the spring generally employed for drinking. Its taste is saline, sometimes more piquant than at others, and is not disagreeable after the first glass or two. It contains a large quantity of muriate of soda and other salts, nearly three-quarters of a grain of iron, and 26 cubic inches of carbonic acid gas to the pint. Dr. Balling says, "A glass of the water fasting causes a sensation of warmth in the stomach, with distension, and eructation of gas shortly afterwards, and at times a slight headache, or oppression over the forehead. On the first days of drinking there

* "Baths of Rhenish Germany."

are increased appetite and activity in the functions of the alimentary canal, with elasticity of spirits. In the second week, a degree of reaction mostly takes place, the patient becomes capricious and irritable, the tongue is furred, the bowels more irregular, and the appetite rather diminished." * Most persons are recommended to drink the prescribed quantity of water in the morning fasting, and not to take any in the after part of the day. In some robust and plethoric persons, owing to the quantity of gas and iron, the water would be likely to disagree without some preparatory treatment; and it is often not well borne by those of an irritable habit, or who have naturally a quick pulse. In some cases where a more active effect on the bowels is desired, Dr. Balling recommends drinking the Pandur, though this spring is principally employed for baths. "So long as patients take the Ragozzi water without dislike, or with a degree of relish, the object of the course is not yet attained, and it should be continued for a longer period. As soon, however, as critical evacuations occur, and the patient acquires a dislike to the water, with a sense of unpleasantness in the stomach, then the point of saturation is attained. This occurs at very different times in different individuals, but rarely before the twenty-first day." †

The combination of stimulating, solvent, and

* "Kissingen et ses Eaux Minérales."

† "Vetter Heilquellenlehre."

tonic powers of the Ragozzi, renders it most suited to relieve those states of disease, connected with, or dependent on, abdominal plethora, liver congestion, and obstruction of the circulation of the vena portæ, which chiefly occur in persons of middle age. A deranged state of stomach and bowels with difficult digestion, or feeling of unusual distension after eating; constipation; piles; a disordered state of the skin with eruptions, especially about the face; painful and irregular menstruation; hypochondriasis; gout, when recent and not occurring in old people; and scrofulous affections of the glands, are among the complaints most likely to be cured or relieved by a course of the Ragozzi water, combined with baths of the Pandur. The same means would be very efficacious in many cases of dyspepsia, arising from excess in the pleasures of the table, or the abuse of ardent spirits, and attended with heartburn, acrid eructations, or pyrosis. With respect to gout, Dr. Wendt observes, "As long as the gout in its various forms is combined with increased sensibility or susceptibility to exterior impressions, Wiesbaden is calculated to render more service; but when it arises from obstruction in the abdominal viscera, and torpidity in the circulation of the vena portæ and the skin, the Pandur baths are preferable." *

* I do not, however, consider Wiesbaden to be so applicable to cases of gout in persons of high nervous susceptibility, or of an in-

* "Die Heilquellen zu Kissingen."

flammatory habit, as it is to those of long standing and hereditary, in individuals somewhat advanced in life. Dr. Maas justly observes, that in cases of gout, complicated with deranged digestion, Kissingen is most applicable.

The Pandur spring contains less salts and iron than the Ragozzi, but more gas ; its action, when drunk, is very similar, though rather more solvent and exciting than the Ragozzi, on which account it is better adapted to some torpid habits. Used in the form of bath, it not unfrequently produces increase of pains, and other critical symptoms, or eruption of the skin, and is very serviceable in some states of disordered health in young females, dependent upon irregular circulation of blood, or vascular fulness of the uterine system, as hysteria and sterility, in which the internal use of the Ragozzi may be advantageously added to the baths. Where these complaints, as well as hypochondriasis, are dependent upon nervous irritability, without visceral obstruction or undue determination of blood to particular organs, a spring of a different kind is indicated.

The water of the Ragozzi is exported in large quantities ; but it loses somewhat of its properties by exportation, the taste of the water from the bottles being often very different from what it is at the springs. In many of the cases in which I have prescribed it at Wiesbaden, I have found that it acts more upon the kidneys, and comparatively seldom upon the bowels. A long list of

ailments is given by the writers on Kissingen, in which the superior efficacy of the waters is advocated. As, however, this is the case with most other local authors, I have considered it needless to recapitulate them, and have restricted myself to specifying those instances in which the waters are acknowledged to be more especially applicable. The general remarks in my work on "Mineral Waters," supersede, moreover, the necessity of repeating under individual heads what has been already advanced.

Besides the above-mentioned, there are also saline springs about a mile distant from the town, from which a considerable quantity of salt is obtained, and which are also employed medicinally, chiefly as baths. One of these springs, the Soolensprudel, presents the curious phenomenon of ebbing and flowing at stated intervals. After the water has occupied the same level for some hours, a deep rumbling noise is heard, and it descends in the well twelve or sixteen feet, whence it gradually remounts to its former level. Of late years the water rises and falls six or eight times in the space of twenty-four hours, nearly an hour being required for its rise, and as much for its descent.* The temperature of the spring is 16° Reaumur. According to Kastner, a pint of water contains 107 grains of muriate of soda, 24 muriate of magnesia, 25 sul-

* An interesting memoir on this phenomenon was read by Professor Forbes before the Royal Society of Edinburgh.

phate of soda, 6 carbonate of magnesia, 3 muriate of lime, with smaller portions of potass, iron, &c., and $30\frac{1}{2}$ inches of carbonic acid gas. The mother-water (*Mutterlauge*), or strong brine, which remains in the reservoir after the crystallisation of the salt, is sometimes added to the baths; from which an idea may be entertained of their exciting property. They are strongly recommended in glandular enlargements of a scrofulous nature, in obstinate rheumatic affections, and long-standing cutaneous disease; and, both in composition and effects, greatly resemble those of Nauheim and Kreutznach.

The new artesian well emits a great abundance of salt water, which is propelled to a considerable height, forming a magnificent *jet d'eau*.

Drs. Granville and Travis usually pass the season at Kissingen.

From the richness of these springs in carbonic acid, baths and douches of this gas have been established. They excite powerfully the nervous and vascular systems—the part in contact with the gas experiencing a sensation of heat and tingling—and are highly efficacious in certain cases of nervous torpidity, paralysis, or neuralgia, and especially when the organs of sense are affected, without vascular erethism, as in some kinds of amaurosis and deafness.

*A pint of water from the Ragozzi-brunnen, analysed by
Kastner, yielded*

	Grains.
Muriate of soda	62·05
Muriate of magnesia	6·85
Muriate of potass	0·91
Carbonate of lime	3·55
Carbonate of soda	0·82
Carbonate of magnesia	2·50
Sulphate of soda	2·00
Silex	2·55
Iron	0·63
	<hr/>
	81·86
Carbonic acid gas	26·25 cubic inches.

With minute proportions of phosphate of soda, earthy and animal matter; and traces of iodine, manganese, and lithion.

The Pandur contains 76 grains of solid substance (of which 57 are muriate of soda), and 28 cubic inches of carbonic acid gas.

BOCKLET.

LIES a little way from the road to Kissingen, from which it is distant a German mile. At one end of the avenues of poplars and other trees, forming the promenade, are two buildings, the Badbau, or Bath-house, and the Saalbau, or Pump-room; the upper parts of both are disposed in apartments for strangers. Between these two buildings are a portico and terrace, whence there is a descent by a flight of steps to the springs. The best accommodation, however, is in the buildings at the other end of the avenue, the Furstenbau, and Neubau. The bathing cabinets in the Badbau are sixteen in number, and not the most convenient. There are also separate cabinets for the douche. Many persons, however, drink the water, of which a large quantity is sent to Kissingen, between which place and Bocklet there is a constant interchange of visitors.

The principal spring, the Ludwigsquelle, has a sharp, piquant, and chalybeate taste. It contains a very large quantity of carbonic acid; according to Kastner's analysis in 1837, as much as 39

cubic inches to the pint, which differs materially from Vogel's former analysis. In the same quantity of water is contained about the following amount of solid substance:—Muriate of soda, $6\frac{1}{2}$ grains, mur. magnesia $4\frac{1}{2}$, carbonates of magnesia and lime $3\frac{1}{2}$, sulphate of soda $2\frac{1}{2}$, sulphate of magnesia $3\frac{1}{2}$, iron nearly $\frac{3}{4}$ grain. The Friedrich's and Carlsquelle are less rich in carbonic acid, muriate and sulphate of magnesia. The Schwefelquelle or Stahlquelle contains very little saline substance, about half a grain of carbonate of iron, and 20 cubic inches carbonic acid gas to the pint. Its temperature is 12° R.

Compared with other springs of the same class, the Ludwigsquelle most resembles the Trinkquelle of Kronthal. The Carolinenbrunnen at Marienbad contains less salts and iron, and scarcely half the quantity of gas; the Schwalbach springs also contain less salt and gas, though nearly the same proportion of iron, and hence would have a more decided tonic action; the Pouhon at Spa has still less gas, saline substance, and iron; while the Bruckenauer, which very nearly approaches the Ludwigsquelle in amount of gas, scarcely contains half the quantity of iron; though from the comparative absence of salts its action would in many cases be more evidently tonic. Dr. Kirchgessner speaks highly of its effect in cases of general and local debility, especially of the digestive organs and the uterine system; as also in the purely nervous kind of hypochondria-

sis and hysteria, not dependent upon visceral congestion.* As, however, I have already enumerated most of the cases to which waters of this class are applicable, I shall not recapitulate them; but would premise that the Ludwigsquelle, from the large quantity of salts and gas which it contains, would be best suited to those cases where a more solvent and aperient action is required; and that where a purely tonic effect is sought, the Stahlquelle or the Schwalbach waters would best answer the purpose.

* "Der Kurort Bocklet mit seinen Heilquellen und Badern."

BRUCKENAU.

THIS bath is situate in a verdant and extremely picturesque valley, through which flows the little river Sinn, about two miles distant from the small town of the same name, and consists of a few lodging-houses, the residence of the king, who formerly passed here some weeks of the summer, a large bath-house containing seventeen cabinets and the elegant Kursaal, second only to that of Wiesbaden, and built in the same style as the modern public edifices at Munich, the interior being richly decorated with fresco paintings. Some of the lodging-houses, as the Saalbau and Kellerbau, can accommodate a great many visitors; altogether I should think about 300 might be lodged in the place.

There are three springs, the Bruckenauer, the Sinnberger, and the Wernarz, within a few paces of each other. The latter is a purely acidulous spring, containing a considerable quantity of gas, but a very minute portion of solid ingredients. The Bruckenhauer might indeed likewise be classed among the acidulous springs, as according

to Kastner's recent analysis, a pint contains as much as 36 cubic inches of carbonic acid gas, and scarcely more than a quarter of a grain of iron; notwithstanding which, however, it has a ferruginous taste,—though less strongly marked than in the Schwalbach springs—owing to the deficiency of saline substance, 2 grains, which if present in any quantity would completely cover the taste of the iron.

Most patients at Bruckenau bathe, many both drink and bathe. A course of the water would be most applicable to those cases in which a tonic and vivifying action is required, in persons of a torpid habit to whom the stimulus of the gas would be beneficial. In those of an opposite temperament, or where the object is to procure the absorption of a larger quantity of iron, the springs of Schwalbach, Bocklet, or Spa, would be preferable.

SECOND DIVISION.

BATHS OF SWITZERLAND.

AIX LES BAINS.

ALTHOUGH actually in Savoy, yet being near to the Swiss frontier, Aix may be included for the sake of convenience among the baths of Switzerland, though it is infinitely superior to them, both in a remedial point of view, and also as respects its general advantages as a summer place of resort.

Aix is a neat town with a population of 4,000 inhabitants, distant two leagues from Chambery, on the Geneva road, and occupies a beautiful situation at the base of Mount Revel, the more elevated parts of the environs commanding extensive and delightful prospects; including the small Lake de Bourget, whence a steamer

descends the Rhone to Lyons in seven or eight hours.

These baths have been frequented from the time of the Romans, by whom they were termed, "*Aquæ Gratianæ*," and are still in high repute at the present day. The casino was established many years ago in an ancient edifice said to have been built on the site of a temple of Diana, of which some vestiges may still be seen. A new Carsaal has been recently opened, scarcely inferior to those at some of the Rhenish baths, and here also gaming tables are tolerated if not positively sanctioned by the government.

There are two chief springs: the so called sulphur, and alum springs, though it is, perhaps, scarcely necessary to say that there is no alum in the water, which is but slightly mineralised, containing, according to Bonjean's analysis, little more than 3 grains of saline substance to the pint, and not a cubic inch of sulphuretted hydrogen gas. The odour of sulphur is less marked in the alum spring, which has a temperature of 37° R., that of the sulphur spring being a little lower; the former is most used for drinking.

The old part of the bathing establishment consists of two piscinæ or lofty vaulted chambers, about fifteen feet square, fitted up with douching apparatus, at various heights from the surface, in order to regulate the degree of force with which the water falls upon the part exposed to its shock. It is not customary to take the bath and the douche

at the same time. Another department, termed l'Enfer, is below the surface of the ground, and its water is hotter than the other springs. The piscinæ of this part are constantly filled with vapour, so that patients have the advantage of a vapour bath at the same time as the douche. A fourth vaulted chamber, adjoining the preceding, has likewise douches, as also a shower-bath, which is a good deal employed in some nervous complaints. The modern part of the establishment, termed Bain Royal, contains six chambers for douching; the pipes are so arranged as to admit of the water being directed to the part, either in a full or a divided stream. In the centre of the building is a saloon, around which are ten cabinets, supplied with douches, and having the floor perforated to allow the ascent of vapour, so as to be used either as douching or vapour baths, which are either general or local; the whole body except the head being immersed in the former case, while in the latter the vapour is directed upon the diseased part by means of tubes converging to a focus. There are likewise two large piscinæ (one for either sex); the water is maintained at a temperature of between 27° and 28° .

The Thermes Berthollet is another establishment exclusively supplied by the alum spring, and consists of a vaulted chamber—in which are gratuitously administered douches and vapour-baths, several cabinets for vapour douches, and a large reservoir which formerly served as a swimming

bath, but is now divided into compartments, some serving as baths for indigent patients, others for animals.

M. Fontan considers these to be accidental sulphurous springs, of which, he observes, they present all the characteristics. The least sulphurous spring is the hottest: they contain free carbonic acid; they arise from earths of secondary formation, containing organic matters liable to decomposition; they contain sulphate of lime. The waters of Aix have been said to be very sulphurous, whereas they are but slightly so; what imparts a great value to these waters is their quantity and temperature, which render them well calculated to be employed in the form of douches, and likewise the skill of the physicians. All the sulphurous waters which I have examined, either in Germany, Switzerland, or Savoy, are of the accidental kind.*

M. Filhol, on the other hand, in his recent work already quoted, combats the opinion of M. Fontan with respect to the nature of the thermal sulphurous springs of Aix-la-Chapelle, and Aix-les-Bains, which he considers very analogous to those of the Pyrenees. As respects the former of these springs I am disposed to agree with him, but as regards Aix, I think with M. Fontan, that the temperature and the mode of using the baths, douches, and vapour, are more instrumental in the benefit de-

* "Recherches sur les Eaux Minérales des Pyrenees, de l'Allemagne, &c." 2nd. Edition, 1853.

rived from its waters, than the sulphurous principle which they contain. The method of douching combined with friction and champooing, for which purpose male and female rubbers are employed, is more perfect at Aix than in almost any other bath. The douche is administered at various degrees of strength and temperature, according to circumstances, either in a descending, ascending, or vertical direction; the douche *ecossaise*, of alternately warm and cold water, is likewise employed in certain cases, and the vapour douches are eminently calculated to be of service in many local ailments.

The baths and vapour baths have a powerfully exciting action, not unfrequently producing feverishness, accelerating the pulse, and occasioning perspiration, which is kept up for some time afterwards by the patient being carried to bed, where he takes some warm liquid. When the excitation has subsided, he feels relieved and better for the rest of the day.

A large proportion of the patients who resort to Aix labour under one or other of the forms of chronic rheumatism, or its consequences, stiffness, swelling, false ankylosis, &c. M. Despine considers the baths and vapour more particularly useful in articular rheumatism, with white swelling of the joints, yielding to pressure, and depending upon the effusion, with thickening of the synovial membrane; other remedies are at the same not unfrequently employed, as compression and iodated ointments.

Among the other cases which are mostly benefited by the Aix baths and donches, may be more particularly specified, chronic cutaneous diseases without inflammatory tendency; paralysis, not depending on organic disease; the majority of scrofulous affections; old wounds and ulcers; chronic pulmonary catarrh; derangement of the digestive organs of an atonic character; some intractable nervous complaints, especially when of a depressive character, and connected with much derangement; and secondary or tertiary syphilitic symptoms affecting the skin. In some nervous disorders electricity is sometimes employed conjointly with bathing. Between 2,000 and 3,000 visitors can be accommodated at Aix at the same time; there is no lack of balls, concerts, and other watering-place diversions. Many visitors dine at the tables d'hôte, but families frequently have dinners sent from a *traiteur*.

LEUK.

To the left, and a little elevated above the high road, passing through the Vallais to the Simplon, stands the village of Leuk. The baths of the same name, which rank among the first in Switzerland, lie some distance up the valley, at the foot of the Gemmi mountain, in a wild and secluded position, formerly not very accessible; a good carriage-road from Sion has however lately been constructed.

Leuk is chiefly resorted to by the natives of Switzerland, the number of foreigners being, comparatively, few; and, in fact, though a short visit would be productive of interest, the place presents no inducement for a protracted sojourn of persons not requiring to use the waters; even the majority of such persons would derive a greater amount of benefit from other springs more agreeably situate, for though the accommodation has been greatly improved of late, there is still much to be desired in this respect; the space for exercise is very limited, and there is but little resource for the occupation of time.

There are twelve springs. The temperature of the principal one, St. Laurent, is 45° R. They contain but a very small proportion of saline or gaseous impregnation (not more than two or three grains, chiefly of lime, to the pint), and are mostly used for bathing, supplying four establishments; viz., the Bain Neuf, Bain Vieux, Bain des Zurichois, and Bain de l'Hotel des Alpes. It is the custom to bathe in common. There are some bathing establishments, which, however, are but little used. At the Hotel des Alpes there are small piscinæ, capable of containing about half-a-dozen persons, which are let to families. Almost all bathe in the public piscinæ, of which there are four, of a quadrangular shape, under one roof, separated from each other by canals, through which the water flows fresh from the springs, and is not unfrequently drunk by the patients while in the bath. Each piscina is large enough to admit of forty persons bathing at the same time; one is appropriated to the higher class of visitors, and one to the poor, and the peasantry of the adjacent districts, who resort to Leuk for relief chiefly from rheumatic affections, and the visceral enlargement consequent on malarious influences, which are so prevalent among the population of several of the Swiss valleys. The other piscinæ are used by persons not disposed to pay so high a price as the first class bathers. Around the piscinæ is a balustrade, where visitors walk about.

Each bather is clothed in a flannel gown.

Some go to the bath as early as five o'clock. The course of treatment lasts from three to six weeks. On the first day the patient remains an hour in the bath, the second day two hours; the duration of the bath is thus gradually increased to four, six, or even eight hours a day, an interval of two or three hours being allowed at dinner-time. Many patients have floating boards to hold their handkerchiefs, books, &c. The use of the bath is discontinued in a like gradual manner, the period during the *debaignée* being diminished half-an-hour daily.

This prolonged application of warm water produces, as may be supposed, a powerfully exciting effect on the skin, and an eruption (*poussée*) generally makes its appearance after the tenth or twelfth bath: it is usually preceded by loss of appetite, sleeplessness, depression of spirits, and other unpleasant symptoms. The eruption assumes a variety of forms in different individuals, and the symptoms are sometimes very severe, requiring special treatment; but in most cases it does not necessitate a suspension of the bathing, and gradually subsides without inconvenience. Besides the cases already specified (rheumatism and enlargement of the liver or spleen), the waters of Leuk enjoy a high reputation in paralytic affections, long standing eruptions, scrofula, old wounds and ulcers, and other cases where a powerful derivative action to the skin is indicated. There is little doubt that the beneficial effects are

to be ascribed more to the continued impression of warm water upon the surface for several hours daily, and to patients breathing a mountain air, than to any specific virtues possessed by the springs themselves.

PFEFFERS.

THESE baths lie near Ragatz, in the Grisons, in a singularly wild and sombre dell, several hundred feet below the level of the surrounding country, and but little enlivened by the sun's rays. They are not approachable by any kind of vehicle; a steep mule-path winding up the hill on one side, and on the other flights of steps are the only paths by which they can be reached. There is only one large bathing and lodging-house on the spot, which formerly belonged to the brotherhood of the Abbey of Pfeffers, which is situate about three miles distant. Latterly, however, a large hotel and bathing-house has been opened at Ragatz, to which the water is conducted through pipes, though necessarily losing much of its temperature in the transit.

The spring lies at some distance from the old bathing-house, with which it is connected by means of a wooden trough, through which the water flows. Persons desirous of seeing it are conducted between rocks, three or four hundred feet high, and so closely approaching each other at the top,

as barely to leave a cleft through which a narrow strip of sky is perceptible. The path, composed of planks fixed along the side of the rock, is too narrow to admit of more than one person passing at a time, and immediately overhangs the Tamina, a foaming mountain torrent, which with deafening noise forces its way beneath.

In point of temperature and composition, the water is very like that of Leuk, containing but a small quantity of saline substance (scarcely three grains to the pint). At the source its temperature is 29° R. Although resorted to every season by many Swiss and German invalids, these waters possess no advantage over others, where the ordinary conveniences of life and space for exercise are found. Patients both drink and bathe: the duration of the bath is an hour. Some patients bathe twice a day in the piscinæ, of which there are eight, each capable of containing about twenty persons. There are likewise cabinets for baths and douches. The action of the baths is sedative. They are used in nervous disorders, and rheumatic ailments. The accommodation at Ragatz is better, and the locality presents resources of which Pfeffers is devoid.

SCHINZNACH.

Is one of the most frequented bathing places in Switzerland, and the accommodation is better than at many of the Swiss baths. It is situate in a spacious valley, through which flows the Aar, three leagues from Baden, at the foot of a hill, on which are the ruins of the Castle of Hapsburg, formerly belonging to the ancestors of the Emperor of Austria. It comprises altogether about sixteen buildings: one of these is a vast hotel, composed of two houses joined by a gallery, and containing about 130 apartments. A handsome lodging and bathing-house of a circular form was erected some years ago, and contains several commodious apartments and bathing-cabinets, with a large saloon for dinner and public balls. A colonnade attached to the house enables visitors to take walking exercise in wet weather.

The ruined castle, whence an extensive view of the country may be obtained, Brugg, the convent of Konigsfield, and the Castle of Wildenstein, are among the most frequented spots in the environs, a detailed account of which will be found in Ebel,

Murray, and other guides to Switzerland. On Sundays, Schinzach is much resorted to by people from the adjacent country.

Invalids both drink and bathe: drinkers assemble at the spring as early as five in the morning; those who bathe frequently remain four or five hours in the water, as at some other places in Switzerland. The spring has a temperature of 63° Fahrenheit, and is of the sulphurous-saline class; sulphate and muriate of lime being the predominating salts, but these are in small quantity. It is of the kind termed accidentally sulphurous, from the saline spring passing through decomposable animal and vegetable matter, and is said to be more sulphurous than any other in Switzerland or Germany. The baths are taken at first for a quarter of an hour twice a day, the time being afterwards gradually increased. They produce a degree of general excitation and considerable determination to the skin, which becomes red during the bath, and after a few baths an eruption appears in some cases. These waters have a high reputation for the relief of cutaneous and rheumatic affections, visceral obstruction, and glandular enlargement of a scrofulous origin.

BADEN.*

THIS bath is situate a few miles from Zurich, with which it is connected by railroad (the only one as yet in Switzerland), on the left bank of the Limmat. The old town is distant a few minutes' walk, by a road bordered with trees and gardens, from the new town, which contains the bath-establishment. The springs are numerous and the water abundant. They are, however, alike in composition and temperature (from 38° to 40° R.), and may therefore be presumed to have a common origin. Drawn in a glass from the spring, bubbles of gas escape from the water, which has a sulphurous smell, though this soon passes off on exposure to the air. When drunk it has a diuretic and rather constipating action. The baths and douches constitute, however, the chief part of the treatment, and symptoms of saturation usually show themselves in a short time, requiring a sus-

* Several years have elapsed since my visit to Baden, of which I did not take any notes, considering the place but little adapted for English visitors. The present short notice is consequently taken from M. James's work.

pension of the course, and a recourse to laxatives; cupping not unfrequently forms part of the treatment, as is also the case at Leuk, a multitude of small cups being applied at the same time.

The cases in which the Baden waters are mostly applied, are abdominal affections, characterised by atony and visceral enlargement, and incipient phthisis: these latter patients inhale in the corridors, which communicate with the bath cabinets, the sulphuretted hydrogen gas, which emanates from the water, and constitutes a powerful sedative. Several continue this treatment during the winter. For cutaneous complaints, Schinznach is generally preferred.*

* The establishment contains 350 private baths. One of the piscinæ (Herrenbad) will contain 100 persons; the other (Freibad) 60 persons. According to Löweg's Analysis, in 1835, a pint of the water contains 34 grains of saline substance, of which 13 are muriate of soda; 10 sulphate of lime; $2\frac{1}{2}$ of (each) sulphate of soda, sulphate of magnesia, and carbonate of lime.

ST. GERVAIS.

ST. GERVAIS is situate in Savoy, near the northern base of Mont Blanc, four leagues from Chamouni, and eleven from Geneva. It is elevated 1,830 feet above the sea, and is a good deal frequented in the summer, more on account of its being a cool residence than for the waters.

Ascending the course of the torrent Bonnant, a narrow valley inclosed between precipitous rocks crowned with fir-trees, leads to a *cul-de-sac* in which lies the establishment. This is a central point for exploring the neighbourhood, which abounds in picturesque scenery ; comprising ravines, torrents, cascades, verdant meadows for pasturage, &c., the higher grounds presenting extensive and varied prospects. Of these the isolated hill, Mont Joli is the most remarkable ; the view from its summit being even preferred by some to that from the Righi.

St. Gervais has likewise its Pont du Diable across the Bonnant. The village is at some distance from the bath establishment, which stands isolated, and is the only place where visitors can

lodge; it is composed of three portions, having in front a spacious courtyard. Behind is a cascade, formed by the Bonnant, the banks of which are agreeably disposed in promenades and gardens.

There are several springs, of which four are chiefly used, the Fontaine Gonthard, being mostly employed for drinking. The springs have a temperature ranging 27° to 30° R. The water has a bitterish salt taste, and, according to the analysis of Pictet, contains 38 grains of saline substance to the pint; of which $17\frac{1}{2}$ are sulphate of soda, $8\frac{1}{2}$ muriate of soda, 7 sulphate of lime, and 3 muriate of magnesia. Its action in the dose of three or four glasses is mildly laxative and diuretic. It has likewise a slight sulphurous impregnation, but the proportion of sulphuretted hydrogen gas is very small, and the odour soon passes off on exposure of the water to the air. Baths are usually combined with the internal use, and can be taken at the natural temperature of the water. A course of these springs, together with the plain diet and mountain air, are well calculated to remove several disordered states of the health consequent upon a residence in capital cities, especially stomach and liver derangement, and disorders of the skin, as *aené*, &c., therewith connected. They are also used in rheumatic and other complaints in which saline thermal springs are indicated.



SCALES OF TEMPERATURE.

	Centesimal.	Reaumur.	Fahrenheit.
Freezing . . .	0	0	32
Lowest bath temp.	5	4	41
	10	8	50
	15	12	59
	20	16	69
	25	20	77
	30	24	86
	35	28	95
Highest bath temp.	40	32	104
Baths at Mont D'Or	45	36	113
Temp. of Russian } vapour baths }	50	40	122
Boiling . . .	100	80	212

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* These notices are considerably curtailed. Many other highly favorable ones from metropolitan Journals, and all those which appeared in the provincial papers, are omitted, not from any disregard, but in order not to lengthen out the present list.

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